

***United States Court of Appeals
for the
District of Columbia Circuit***



**TRANSCRIPT OF
RECORD**

891

JOINT APPENDIX

IN THE
United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Appeal No. 20884

HELGE ERIK LEVBRING, *Plaintiff-Appellant,*

v.

EDWARD J. BRENNER, Commissioner of Patents,
Defendant-Appellee

On Appeal from the United States District Court for the
District of Columbia

United States Court of Appeals
for the District of Columbia Circuit

FILED JUN 13 1967

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JOINT APPENDIX

Docket Entries

1965

- Oct. 8—Complaint
- Oct. 8—Summons and copies of Complaint—served
10/11/65
- Dec. 6—Answer to Complaint
- Dec. 6—Calendared

1966

- Feb. 8—Stipulation continuing trial from 3/14/66 to
6/14/66
- June 14—Trial begun and respited
- June 15—Trial resumed and concluded
- June 15—Plaintiff's Pretrial Brief
- July 8—Transcript of Proceedings—Court's copy filed
- Aug. 5—Plaintiff's Brief
- Sept. 6—Defendant's Brief
- Sept. 7—Plaintiff's Reply Brief
- Nov. 10—Findings of Fact, Conclusions of Law—Finding
for Defendant
- Nov. 10—Opinion dismissing Complaint
- Nov. 10—Judgment dismissing Complaint, with costs
against Plaintiff.

1967

- Jan. 6—Notice of Appeal by Plaintiff
- Feb. 9—Transcript of Proceedings—Plaintiff's copy
- Feb. 9—Exhibit 1 of Plaintiff
- Feb. 9—Stipulation extending time for filing and docketing
record on appeal until April 6, 1967
- Feb. 9—Order extending time for filing and docketing
record on appeal until April 6, 1967
- April 4—Plaintiff's Exhibit 2
- April 14—Stipulation as to Supplemental Record

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

Civil Action No. 2499-65

To Obtain Letters Patent Under 35 U.S.C. 145

HELGE ERIK LEVRING, C. F. Richsvej 48, Copenhagen,
Denmark, *Plaintiff*,

v.

EDWARD J. BRENNER, Commissioner of Patents,
Washington, D. C., *Defendant*.

TO THE HONORABLE JUDGES OF THE UNITED STATES DISTRICT
COURT FOR THE DISTRICT OF COLUMBIA.

Complaint

Plaintiff for its Complaint herein alleges:—

1. Plaintiff, Helge Erik Levring, is a Danish citizen residing at C. F. Richsvej 48, Copenhagen, Denmark.
2. Defendant, Edward J. Brenner, Commissioner of Patents, is a citizen of the United States and, in his official capacity as Commissioner of Patents, is an official resident of the District of Columbia.
3. This is a civil action under the Patent Laws of the United States, and is brought under Title 35, United States Code, Section 145, to authorize the Commissioner of Patents to issue a patent upon a certain application for an invention, hereinafter identified, the issuance of which patent has been refused by the Commissioner of Patents, by reason of a decision of the Patent Office Board of Appeals, as will more fully appear hereinafter.
4. On July 12, 1957, Helge Erik Levring, a citizen of Denmark, residing at C. F. Richsvej 48, Copenhagen, Denmark, being then the original, first, and sole inventor of a new and useful improvement in a METHOD OF APPLYING COATINGS TO THE SURFACES OF POROUS MATERIAL, and lawfully

entitled to the grant of United States Letters Patent thereon, duly filed in the United States Patent Office an application for said Letters Patent, said application receiving Serial No. 671,412, and claiming priority of a corresponding German application No. L 26.942 IVc/75c, dated February 22, 1957. Plaintiff was at that time and still remains sole owner of the entire right, title and interest in and to the aforesaid invention and the application for patent so identified.

5. After due prosecution before the Primary Examiner of the Patent Office, the claims were finally rejected and an Appeal was duly taken to the Board of Appeals of the United States Patent Office, which tribunal by its decision rendered August 13, 1965, affirmed prior rulings of the Primary Examiner of the Patent Office finally rejecting claims 9, 10 and 11 of the aforesaid application Serial No. 671,412. The claims 9, 10 and 11, are as follows:

- 9. A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating said article for a period not exceeding 120 seconds to raise the surface temperature thereof to a temperature of between 120°F and 390°F, and immediately thereafter applying to the surface of said article a lacquer finish, the time and intensity of the heating and the temperature of which is selected so that upon the application of the lacquer to the surface of the article the temperature of the surface of the article will immediately drop by at least 50°F.—
- 10. The method as in claim 9, comprising the further step of subjecting the surface of said article to a blast of cold air upon the application of the lacquer to said surface.—
- 11. A method of coating the surface of a wooden article with a lacquer finish of the type hardenable by poly-

merization which comprises superficially heating the surface of said wooden article for a period not exceeding 120 seconds to raise the surface temperature of said article to between 150°F and 390°F, immediately thereafter applying to said surface a lacquer finish, the time and intensity of said heating and the temperature of said lacquer being so selected that upon application of said lacquer finish to said surface, the temperature of the surface will drop by at least 50°F, and thereafter reheating the coated surface to a temperature sufficient to cause a polymerization of said lacquer.—

6. No appeal to the United States Court of Customs and Patent Appeals from said decision of the Patent Office Board of Appeals has been taken, Plaintiff electing instead to prosecute this action as provided for by Title 35, United States Code, Section 145.

WHEREFORE, Plaintiff being dissatisfied with the aforesaid decision of the Board of Appeals, brings this action under and in accordance with the provisions of the Statute aforesaid and prays the Honorable Court:

A. To order, adjudge and decree that Plaintiff, as owner of all right, title and interest in and to the said invention and the said application Serial No. 671,412, is entitled to receive Letters Patent of the United States for the Invention as specified and set forth in claims 9, 10 and 11 of said application, and such other claims to said invention as the Honorable Court may find necessary and proper to the full protection thereof.

B. To authorize and direct the Commissioner of Patents to issue to Plaintiff, as owner of said application, Letters Patent of the United States thereon, including the aforesaid claims, upon the filing in the Patent Office by Plaintiff of a copy of the adjudication of this Court and other-

wise complying with the requirements of the law in such cases made and provided.

C. For such other and further relief as the Honorable Court may deem just and proper.

HELGE ERIK LEVRING,

By DONALD A. KAUL

Donald A. Kaul

970 National Press Building

Washington, D. C. 20004

His Attorney

October 8, 1965

Answer to Complaint

To the Honorable the Judges of the United States District Court for the District of Columbia

1, 2, 3. Defendant admits the allegations of these paragraphs of the complaint.

4. Defendant admits that plaintiff filed an application in the United States Patent Office as alleged in the first sentence of this paragraph of the complaint, and that priority of a corresponding German application was claimed; but defendant denies that plaintiff is the original, first and sole inventor of the Method of Applying Coatings to the Surfaces of Porous Material described in said United States patent application, and denies also that plaintiff is lawfully entitled to the grant of United States letters patent thereon, for reasons hereinafter set forth.

Further, defendant states that he is without knowledge or information sufficient to form a belief as to the truth of the allegations of the second sentence of this paragraph of the complaint, and, therefore, defendant denies these allegations.

5. Defendant admits the allegations of the first sentence of this paragraph of the complaint; but defendant denies that claims 9 and 11 reproduced in the second sentence of this paragraph of the complaint are correct, since the official record of the application file in the Patent Office shows that in line 10 of claim 9 and in line 11 of claim 11 of the reproduced claims the term "the heating" appears as *said heating*.

6. Defendant admits the allegation of this paragraph of the complaint.

FURTHER ANSWERING, defendant denies that plaintiff is entitled to receive letters patent of the United States, as specified and set forth in claims 9, 10 and 11 of the application identified in paragraph 4 of the complaint, as requested in prayer A thereof, because those claims do not define an invention patentable under the law, for the reasons and in view of the prior patents cited and relied upon in the Examiner's Answer and the decision of the Board of Appeals in that application. Profert of said prior patents, said Answer and said decision, is hereby made.

Respectfully submitted,

JOSEPH SCHIMMEL
*Acting Solicitor, United States
Patent Office
Attorney for Defendant*

1

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

Civil Action No. 2499-65

HELGE ERIK LEVRING, *Plaintiff*,

v.

EDWARD J. BRENNER, As Commissioner of Patents,
Defendant.

Tuesday, June 14, 1966.

The above-entitled matter came on for trial before the
HONORABLE CHIEF JUDGE MATTHEW F. MCGUIRE, United
States District Judge.

APPEARANCES:

On behalf of the Plaintiff:

DONALD A. KAUL, Esq., and HERBERT J. JACOBI, Esq.

On behalf of the Defendant:

LUTRELLE F. PARKER, Esq., and JOSEPH SCHIMMEL, Esq.

* * * * *

4

PROCEEDINGS

(Plaintiff's Exhibits 1 through 15 were marked for
identification.)

The Deputy Clerk: The case of Levring versus Brenner,
Civil Action No. 2499-65.

The Court: Very well.

Mr. Kaul: With Your Honor's permission, I would first
like to introduce to the Court Mr. Host Madsen who is

the Patent Agent in Copenhagen, Denmark, who came over for the trial, and Mr. Hensen, who is the Scientific Counsellor for the Danish Embassy here in Washington. Both are present.

The Court: All right.

Mr. Kaul: On behalf of the plaintiff, we would like to thank Your Honor for agreeing to hear this case at such a late date, and hope that Judge Jackson will soon be feeling better.

As Your Honor knows, this is a patent case under 35 U.S.C. 145 seeking a judgment directing the Commissioner of Patents to issue the plaintiff a patent.

The invention at issue relates to a process for applying a lacquer coating or finish to a wooden article. It is a factory type process which is used commercially for manufacturing flooring, wallboards, kitchen cabinets, and
5 many other types of wooden articles which are commonly used.

Naturally, in any surface finishing operation of this type, the primary concern is the quality of the finish which is produced, its smoothness, its regularity, its appearance.

However, there is an equally important consideration which this invention comprehends, and that is the water content or moisture balance of the wood being coated.

All of the prior techniques known before this invention completely dried out the wood while it was being coated, and as a result, the coating might have been all right but the article itself was brittle and not useful.

This invention accomplishes a coating unparalleled by any that was created by any prior method and additionally, it does not disturb the moisture balance of the wood.

Also, the process of the present invention takes two to three minutes as opposed to several hours with the prior art in the known techniques before this invention.

Thus, Your Honor, you will appreciate it is of a great commercial value to the companies that use it.

Now, the issue in this case, of course, is the obviousness. The Patent Office has held that the invention would have

6 been obvious to one having ordinary skill in the art at the time the invention was made.

 We realize that the burden is heavily upon the plaintiff in a case of this type but we will introduce evidence which we feel will establish beyond any question that this is a very new and meritorious invention unparalleled by anything that was known before.

 The plaintiff himself, who is a Danish citizen, has traveled over here to testify. He will introduce evidence in the form of test results.

 He will tell how the invention was developed. He will testify as to the commercial success, and the great industry acceptance of his invention, and it is now being used in a great many countries in Europe.

 Mr. Sidney Taylor, who is an expert witness from Great Britain, and who traveled over here to testify will relate how his company, one of the largest companies in Great Britain, paid the plaintiff \$400,000 to buy—over \$400,000 to buy the rights of the invention for Great Britain alone.

 This was not a hasty action. They investigated for a year before they bought these patent rights. They did laboratory tests and they had their 22 man Patent Department do a thorough investigation, and after all
7 of this investigation, testing, they found they could not circumvent the patent, and as a result, they purchased the rights for this considerable sum of money.

 This, of course, has to be balanced against the Patent Office's position that this was something that is obvious, and anyone skilled in the art would have known about it.

 Finally, we will have Mr. Jensen, also a witness from Denmark testify. Mr. Jensen is the Production Manager of the largest flooring plant in Europe.

 The plaintiff's invention is used in 99 per cent of their operations and they have been using it commercially for ten years or so, and the results which they have gotten will be testified to.

 He has had many visitors to his plant who have expressed utter amazement of the results obtained by this process, and

after that, have gone on themselves to acquire the process from the plaintiff.

Finally, as to the prior art, our witnesses will all testify—they will explain the patent, explain how the Patent Office either inaccurately or erroneously interpreted each and every one of the patents.

8 In fact, the Patent Office's interpretation of each patent seems to be contrary to the very teachings of the patents themselves, and not only would it not be obvious to one skilled in the art to combine the patent in the manner which the defendant suggested, but in fact, it is virtually impossible to do so.

To just detail the invention, the important features of the invention for Your Honor at the out-set, it is a process for coating wood where there is a superficial heating only. Only the surface of the article being coated is heated, and the time of heating is less than 120 seconds, less than two minutes, and the temperature of the heating is such that the surface is raised to a particular temperature range between 120 degrees and 390 degrees.

Immediately after this pre-heating step, the coating material is applied to the wood, and there is a temperature drop of at least 50 degrees Fahrenheit.

This means that almost instantaneously the coating material has been cured, and the article cools in a matter of a minute or two, and the entire process is over in two or three minutes, and as contrasted to prior art techniques, as will be demonstrated, was a matter of two or three or more hours.

9 Based on this, we feel that we will establish a prima facie case, and without question in overcoming the presumption in favor of the Patent Office.

The Court: Mr. Schimmel, do you adopt the description of the invention as counsel has related it to the Court, the process of coating wood?

Mr. Schimmel: May I make a little statement? I do

not intend to defend the action of the Patent Office in this case.

I have come here this morning to introduce to you, since this is the first case you have tried for many years, as I understand it, Mr. Lutrelle Parker who is a member of the staff of the Solicitor's Office of the Patent Office.

He has been in the Patent Office many years. He served as an Examiner in the Patent Office, and about three or three and a half years ago, he was tapped for service in the Solicitor's Office.

He has tried about three cases before Judge Jackson, and I thought it would be appropriate to introduce him to the Court at this moment, and he will explain the position of the Patent Office.

The Court: Very well. I will address my question to you, Mr. Parker.

Mr. Parker: Yes, sir.

10 The Court: Do you agree with the definition of the alleged invention as given by counsel?

Mr. Parker: Yes, in the sense that we have a two step coating operation.

The Court: No, I mean the nature of the invention as described.

In other words, a process of coating wood, superficial heating of the surface, and about 120 seconds, as I understood it, and the surface temperature is raised from 120 degrees up to about 390 degrees Fahrenheit. Is that right?

Mr. Parker: Yes.

The Court: The coating material is then applied, and there is a drop in the temperature of the surface and the whole business cools in about two seconds.

Mr. Parker: That is the precise statement of the invention that we agree with, Your Honor.

The Court: All right.

Am I correct, Mr. Kaul, in concluding in my own way that what is important about this from the critical aspect is the so-called water balance? Is that right?

Mr. Kaul: It is three things, Your Honor. It is the nature of the coating itself, the appearance of it.
11 It is the water balance, and it is the great speed at which the process is carried out. Those three things, Your Honor.

The Court: You don't mean the nature of the coating. The nature of the lacquer, isn't it? I mean the appearance?

Mr. Kaul: The appearance.

The Court: The appearance of the finished product, is that right?

Mr. Kaul: Yes.

The Court: Then the water balance and what else did you say?

Mr. Kaul: The cooling and the speed of the process.

The Court: All right, fine.

Do you want to say anything further?

Mr. Parker: Yes, may I?

The Court: Yes.

Mr. Parker: May it please the Court, counsel for the plaintiff and I have had a conference just before coming in, and I showed him defendant's exhibit No. 1 which Your Honor has before him.

With Your Honor's permission, we would like to introduce that into evidence out of turn.

The Court: I assume there is no objection?

12 Mr. Kaul: No objection.

The Court: All right.

(Defendant's Exhibit No. 1 was marked for identification, and received into evidence.)

The Court: This is the File Wrapper, isn't it?

Mr. Parker: It will be introduced a little later on by the plaintiff, the File Wrapper. Defendant's exhibit contains the decision of the Board of Appeals, and five references.

The Court: I see. The five references are Aylsworth, Carter, Gard, Hofmann and Taylor, and the Examiner's

Answer is "F" and the decision by the Board of Appeals is "G"?

Mr. Parker: That is correct.

The Court: Aylsworth is No. 1,139,470, Carter is 1,140,873, and Gard, 2,631,109, Hofmann, 1,574,890, and Taylor, 1,435,031.

Mr. Parker: That is correct, Your Honor.

Now, I might say that our position is based on the Examiner's Answer, and the decision of the Board of Appeals.

We feel that the basic reference here, since we had a concise analysis of the invention itself, shows the invention, that is, shows the steps of heating to a temperature, coating, and then as called for by the third claim,
13 baking the surface itself.

We feel that the two secondary references, that is, the patent to Taylor and the patent to Gard, teach superficial heating, and the patent to Gard, teaches the cooling down to a level of 50 degrees between the heated temperature of the wood itself, and the temperature accomplished at the end of the coating operation.

Now, the third claim here will call for a baking operation. The second claim distinguishes from the first in that it calls for air cooling, a blowing operation.

The fourth and fifth patents have been put into the case, that is, the Hofmann patent and the patent to Carter, to show this blowing operation.

To summarize our position: First the basic invention is shown in the first patent, the primary patent, Aylsworth.

The two secondary references show superficial heating and the coating operation, and the fourth and fifth references show Your Honor the cooling operation.

The Court: That is Hofmann and Carter?

Mr. Parker: Yes Your Honor.

The Court: All right.

14 Mr. Kaul: To simplify it to Your Honor, as far as those fourth and fifth references go, Hofmann and Carter, we are willing to agree that they show

—did agree before the Board of Appeals that they showed the idea of cooling plastic with cool air. We do not allege that—

The Court: You are relating yourself, I presume, to heating temperature and the coating and baking, is that correct?

Mr. Kaul: Yes:

The Court: That is the only matter before me?

Mr. Kaul: That is correct.

The Court: What are the claims that involve that?

Mr. Kaul: Claim 9 and that is the basic claim. Claim 10 is the cooling air steps and depends on Claim 9.

Claim 11 is essentially the same as Claim 9 and it adds the further step of a re-heating.

The Court: Is there any claim involving the blowing operation?

Mr. Kaul: Just Claim 10.

The Court: Are you dropping that?

Mr. Kaul: We are not dropping that, Your Honor. It depends on Claim 9, and we have limited the scope of it.

The Court: I see.

Claim 9 then is actually the critical claim?

15 Mr. Kaul: That is correct.

At this time we would like to introduce into evidence the File Wrapper of the action, and it had been marked for identification as Plaintiff's Exhibit 1.

The Court: If there is no objection, it is received.

Mr. Parker: No objection.

(Plaintiff's Exhibit No. 1 was received into evidence.)

Mr. Kaul: Let the record show that this is a certified copy, also, please.

We would now like to call as our first witness Mr. Helge Erik Levring.

The Court: Will you make a proffer as to his testimony?

Mr. Kaul: Yes, Your Honor. The inventor will testify as to the tests which he has conducted. He will introduce

a laboratory report in accordance with those tests. He will introduce samples which were conducted under this laboratory report.

The Court: Can we have Claim 9 spread upon the record, please?

Mr. Kaul: I beg your pardon?

The Court: May we have Claim 9 put into the record?

16 Mr. Kaul: Yes. Shall I read that into the record?

The Court: Yes.

Mr. Kaul: Reading: "A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating said article for a period not exceeding 120 seconds to raise the surface temperature thereof to a temperature of between 120 degrees Fahrenheit and 390 degrees Fahrenheit, and immediately thereafter applying to the surface of said article a lacquer finish, the time and intensity of the heating and the temperature of which is selected so that upon the application of the lacquer to the surface of the article the temperature of the surface of the article will immediately drop by at least 50 degrees Fahrenheit."

The Court: Thank you very much.

Helge Erik Levring

was called as a witness by and on behalf of the Plaintiff, and having been first duly sworn, was examined and testified as follows:

Direct Examination

By Mr. Kaul:

Q. Would you state your name, please? A. Helge Erik Levring.

17 Q. And your age, please. A. 54.

Q. And what is your residence? A. In Copenhagen.

Q. Is that in Denmark? A. In Denmark.

Mr. Parker: May I ask him to talk a little louder, with Your Honor's permission?

The Court: Let me say to you that the aconustical situation in this room is not very good today because we have air conditioning.

You don't have that in Copenhagen. You don't need it. We have to have it here, and so, therefore, in the circumstances, if you raise your voice just a little bit, Mr. Parker and Mr. Schimmel can hear you and I can hear you.

The Witness: I shall.

The Court: All right.

By Mr. Kaul:

Q. Now, what is your occupation, Mr. Levring? A. I am an engineer.

Q. What is your educational background? A. I graduated from the Danish Technical High School as
18 a mechanical engineer.

Q. Are you the Helge Erik Levring that has been identified in the patent application involved in this suit? A. Yes.

Q. What company are you employed with? A. I have some companies in Denmark, and one in England and I am the president of three of them.

Q. What is the company that would be most closely associated with the invention involved in this proceeding? A. The company is Helectrok.

Q. And what is your position with that company? A. I am the owner of it. A personal firm.

Q. How long has the company been in business? A. The company has been in business as such approximately two years, but it was—it was built-up from one of the other companies that I ran for 18 years, approximately.

Q. What would you say is the total length of your experience in the surface finishing industry? A. About 22 years.

Q. Based upon your education and your experience for the past 22 years, do you believe that you are knowledgeable in the practices and the procedures within the surface finishing industry? A. I do believe that.

Q. Would you relate for us the manner in which you came to invent the subject matter which is involved in this controversy? A. I had worked for several years on finishing metals, and we had succeeded in speeding up the curing of paints applied to metals.

Q. Is there any difference in the metal finishing industry as opposed to the wood finishing industry? A. Oh, yes, there is a big difference.

Q. What difference would that be? A. The metals is a homogeneous surface with no pores. Wood and products of wood is a very porous material with pure heat conduction.

Q. Is there any difference insofar as moisture balance? A. There is moisture in timber and wood that can give difficulty in metals.

The Court: Would you ask him what he means specifically by moisture balance?

By Mr. Kaul:

Q. Would you give—

20 The Court: In relation to metal and in relation to wood.

The Witness: In relation to metal, there is no question of moisture balance.

The Court: What specifically is moisture balance? That is a word of art in your field. I don't know the meaning of it as you use it.

The Witness: A piece of wood absorbs so much—a certain amount of moisture compared with the humidity of the air.

An example given, relative moisture content or humidity in the air of 50 per cent, the moisture balance in many types of timber will be about 7, 8 or 9 per cent. It depends on the type of wood and timber.

When the humidity in the air rises, the timber or the wood absorbs some of the moisture and the moisture content in the wood rises.

The Court: Well, would I be correct in equating the word balance with moisture content?

The Witness: Yes, Your Honor.

The Court: All right.

By Mr. Kaul:

Q. You can now continue with your development
21 of the invention and—

The Court: I hope you don't mind me asking these questions occasionally. I want to be certain that I understand his testimony.

Mr. Kaul: We appreciate any questions that Your Honor will ask.

The Court: I am not an engineer.

By Mr. Kaul:

Q. Will you continue, Mr. Levring, with the development of the invention. A. Yes. There was an inquiry from friends coming from abroad if it would be possible in some way or other to speed up the curing of finishes applied to wood, and I took up the problem.

As I saw it at that time, it was a bottle-neck in the furniture production and in floorboard production and door production.

Q. What was being done at that time in the industry, and this is prior to your invention? A. In a very small research in the Scandinavian area where there is a fairly big industry or many industries on timber and wood, and the way the items were treated was by spraying
22 paint on the surface leaving the articles to dry in the air.

In a few cases, they used bucks through which they blew some moderately heated air to accelerate the drying time.

Q. This would be after the coating material? A. Yes.

Q. Would it be accurate to refer to these as post-heating operations in the future? A. Yes, that is an easy way to put it.

Q. All right. So at the time you were developing your invention, post-heating techniques were being used and you considered those and then what happened? A. I considered that and then as I just described, the way of speeding up the curing was by blowing air in it—through chambers where the items were drying.

I had for the curing of paints and metals made use of infra-red radiation giving me a shorter curing time than I could obtain by blowing hot air in what we in the industry call convection heat, and it was a natural thing for me to try and make use of the radiation after application of the paint but I came to very poor results.

Q. Would it be fair to say that you tried these
23 post-heating techniques and were not satisfied? A. I was not satisfied because I got bubbles in the paint. I didn't get a paint that I could utilize for commercial purposes.

Q. Then what steps did you take at that time? A. Then I started to make use of the heat capacity of the timber and I did radiate at the wooden surface before I applied paint and some times I succeeded in getting good results, and some times I did not. So I started up investigation why I some times had good results and why I didn't have it.

Q. And at this point, did you gradually find some limits which would give you results and some which would not? A. Gradually I found results. Let me say figures within which limits I got results that were good.

Q. While you were standing here you heard me read for the record Claim 9 which is the claim on appeal? A. I heard that, yes.

Q. Do you regard that as an accurate definition of your invention? A. It is an accurate definition of my invention.

Q. Are the limits as set forth in that claim, as far as temperature and time, those limits which you found
24 to be critical at the time that you made your invention? A. They are the critical limits.

Q. Let me ask you what would happen—let me first state, as I recall the claim set forth, the temperature range is 120 degrees to 390 degrees. Let me ask you what would happen if the temperature was outside that range, either less than 120 degrees or more than 390 degrees? A. If it were less than 120 degrees, I would not have that rapid cure of the paint.

If it was above, the paint was distorted.

Q. The paint was distorted? A. Yes, and the timber in several cases was distorted.

Q. Now, how about if the time of heating exceeded 120 seconds? A. If it exceeded 120 seconds, I hadn't the control of the heat I had applied to the surface any more because I got a deeply heating that I found was of no advantage and only disturbed the paint.

Q. Now, what would happen if the lacquer finishing material that you were using were heated to such a degree that you did not get the temperature drop of 50 degrees—at least 50 degrees as specified in the claim?

25 A. I had bad results because it proved to me that the penetration of heat was too deep.

Q. So would it be accurate to state that any tests which you did outside of the limits set forth in this claim did not give you results which you desired? A. It didn't give me the results that I desired.

Q. All right. Did you perform certain laboratory tests for the purposes of this trial? A. Yes, I did.

Q. Did you prepare a report on these tests?

The Court: What was the nature of these laboratory tests?

Mr. Kaul: I will get into that, Your Honor, with the witness.

The Court: I think if you are going to relate to the laboratory tests, and the results, I think we ought to know what the tests were.

That may up-set your presentation and I do not want to do that.

Mr. Kaul: Not at all, Your Honor. It is actually in the report itself which I was going to have the witness identify.

The tests are set forth in some detail and I will have
26 him summarize them.

The Court: All right.

By Mr. Kaul:

Q. I will now show you a document marked for identification as plaintiff's exhibit 2, and ask if you can identify that? A. Yes, I can identify it.

Mr. Kaul: Your Honor, I did leave a copy of this report up here with you since the witness will testify to it.

The Court: Yes.

May I ask you this question before we get into this?

This relates to all types of wood, mahogany, walnut, birch, and so on?

The Witness: My patent application relates to all types of wood, and to types of porous material such as hardport or chipport and even asbestos.

The Court: Doesn't the viscosity of the wood vary with the nature of the wood?

The Witness: It does but my system works within the limits on, at least, the types of wood that I have tested.

The Court: All right. Thank you.

The Witness: There might be one or two special types of wood that I have not tried out.

27 By Mr. Kaul:

Q. You don't know of them? A. No, I don't.

The Court: The materials used for your tests are solid boards, laminated boards and built-up boards?

The Witness: Yes.

The Court: What is the distinction between a laminated board and a built-up board? This is for my information.

The Witness: The laminated board consists of several layers of solid boards.

The built-up boards, a panel, that is built-up by two pieces of board kept from each other by means of a frame and some space in between. That is the way most doors are built-up.

The Court: I see. Thank you.

The Witness: A better expression might have been a panel.

By Mr. Kaul:

Q. Since the equipment that you used and so on is set forth in here, Mr. Levring, and I don't think it is necessary to take the court's time to read through all of that.

Did you prepare the report yourself? A. Yes, at
28 the last stage I did. I had two assistants in my laboratory and they made a full report and I took an extract of the report not to make it too long.

Q. But you say that the material set forth in here is accurate to your own personal knowledge? A. It is accurate. It is the essential side of it.

Q. Now, let's turn to page—sides 4 through 6 of the report where you have stopped talking about the equipment, and materials used and have started a comparison of the deep heating, and superficial heating.

Would you summarize for the court the nature of the tests which you ran on these various samples? A. Yes. Sample AP 1—

Q. Let me ask this: Before you go into the specific samples, would you just tell the court the idea or what you were trying to prove by means of the tests? A. I was trying to show the actual differences between a deeply heating and what I understand is a superficial heating.

The Court: How was the heat applied? By a form of radiation?

The Witness: It was applied by radiation.

By Mr. Kaul:

Q. Were the samples used in the deep heating,
29 and the superficial heating cut from the same piece
of wood? A. It was cut from the same piece of
floorboard but the floorboard is built-up by several pieces
of wood.

Q. Well, what I am trying to establish for the court
is—well, I want you to explain to the court that your
testing was a fair testing. In other words, you did not
use a block of inferior wood for one test and a block of
superior wood for your tests. A. I wouldn't do that.

Q. Was each test, Sample AP 1 compared with Sample
AP 2, and were both of those two samples cut from the
same board and treated with the same materials? A. It
was cut from the same board, and I stated the moisture
content in the boards.

Q. Now, I would like to show you samples AP 1 and
AP 2 and they have been marked for identification as
plaintiff's exhibits 3 and 4, and ask you if you can identify
them? A. I can.

The Court: Now, identify them in the category men-
tioned within the test samples, a built-up board or a lami-
nated board.

The Witness: These are solid boards, pieces of
30 solid boards, and AP 1 was a piece of board on
which I placed micro thermocouples in the surface
and another micro thermocouple was placed in the middle
of the board and drilled a hole 1.4 millimeters in diameter
and inserted 30 millimeters into the piece of wood, the
thermocouples and recording the temperatures on the
thermocouples on my recorder described before, and I did
it to make sure that when I radiated to the surface, I had
a raise of temperature so that it was very close—the tem-
perature in the middle of the wood was very close or prac-
tically the same as the temperature on the surface so that
I could prove that this had been heated up to the tempera-
ture shown on my graph.

By Mr. Kaul:

Q. Now, considering exhibit 3 which is your Sample AP 1, you have a detailed test set forth on pages 4 and 5.

The Court: What sort of board is this?

The Witness: This one is beech.

The Court: No, that is the nature of the wood. What sort of board is it? Is it laminated or what?

The Witness: That is a solid board, used for floor board.

The Court: I see.

31 By Mr. Kaul:

Q. Would you just summarize the test which you did on that board, that Sample AP 1? A. Yes. After having thoroughly heating this board, I applied the paint, as described, to the surface and had fairly rapid cure but a very poor result, and it took an extremely long time to cool down the item.

Q. Now, how about the comparative test which was done on Exhibit 4? A. The AP 2, I placed micro thermocouples on the surface and recorded the variations of temperature in the surface.

Q. Could you just summarize the nature of that test as compared with the earlier one?

The Court: How different was that from the first test that you made?

The Witness: I did the heating of the surface here in about 30 seconds, and the temperature rose to a much higher temperature on this but in that very short time, so that I obtained a superficial heating and that was proved by passing, after termination of radiation, passing the item through a paint curtain, applying the paint to the surface and I recorded a temperature drop that was

32 much above the 50 degrees claimed in my invention.

The Court: What sort of device did you use for heating? It was electrical, of course?

The Witness: Yes, electrical. It consists of a tube—a steel tube with electrical heating elements inside. The

temperature of the tube surface was controlled by thermocouple electronics and so that I could keep the surface at the temperature that I wanted.

The Court: How far away from the surface of the board was the heating device?

The Witness: About ten inches.

The Court: Thank you.

By Mr. Kaul:

Q. Would you describe, as an expert in this surface finishing art, would you describe the comparative results obtained on the two specimens? A. Yes. On Sample—exhibit No. 4, AP 2, my sample, it gives me a—

Q. Is that the one that is in accordance with your process? A. It is in accordance with my process and it gives me a satisfactory surface. It was cured rapidly and satisfactorily.

33 The Court: When you use the term paint, you are not referring to the word lacquer, are you?

The Witness: This is lacquer.

The Court: When you use paint, it is interchangeable with lacquer. Lacquer is a form of paint but specifically it is not paint.

The Witness: Thank you, Your Honor, I will use—

The Court: I am not telling you. I am only asking for information. I don't want to get mixed up with the terms.

The Witness: We use in our language the same—with paint we understand pigmented paints or else we have lacquers or clears.

The Court: You are not talking about pigmented paint, of course?

The Witness: Not in this instance. I can use pigmented paint but—

The Court: You do?

The Witness: Oh, yes.

The Court: All right.

By Mr. Kaul:

Q. Now, how about the finish that was obtained on other samples there? A. That wasn't usable.

34 Q. Do you think that would be commercially acceptable? A. It is not.

The Court: Now, you said with reference to the samples. What samples are you referring to?

Mr. Kaul: What exhibit is that?

The Witness: Exhibit No. 3 that was not commercially useful.

By Mr. Kaul:

Q. That was not treated in your process, was it? A. It was not, no. May I add one thing?

Q. Certainly. A. I weighed both samples before the treatment and after treatment, and I stated that there was a very big loss of moisture content in the deeply heated sample, AP 1 while the loss of moisture in Sample AP 2 was negligible.

Q. At this point, Mr. Levring, I would like to ask you to open to the graphs which you have there in the report. A. Yes.

The Court: Now, referring to the laboratory report and exhibit No. 2, isn't it?

Mr. Kaul: That is correct, and there are several graphs appearing after the last page.

By Mr. Kaul:

35 Q. Would you open the first two graphs which is marked Figure AP 1 and Figure AP 2. A. Yes.

Q. And relate for us how these graphs tie in with the tests which you conducted on these two samples marked as exhibits 3 and 4. A. Oh, yes. We start at the right end of it, and the right end of it shows the start of the process and there will be two graphs in actual fact, and it is as if the pencil jumps up and down, and that is because I used a switch from one thermocouple to the other.

Q. What is the top part of the curve? A. The top part of the curve is the surface temperature.

Q. What is the bottom part of the curve? A. The bottom is the interior temperature.

Q. Is this plotted against time along the bottom there? A. It is plotted against time.

Q. And so— A. Until after 63 minutes.

Q. At 63 minutes, what happens? A. It seems to be balanced between the time and the surface and the middle of the sample, and then I speeded up the recorder
36 and just before I applied the paint to prove the temperature drop in the instant of application of paint, and you see at 63 minutes and two seconds there is a drop.

Q. Is that when you applied the coating? A. That's when I applied the coating.

Q. Was that drop a 50 degree Fahrenheit drop or not? A. It was—

The Court: The temperature here relates to centigrade, I assume.

The Witness: Yes.

By Mr. Kaul:

Q. If you converted it into Fahrenheits, as specified in the claim, would it be a 50 degree drop? A. It is about—

Q. I don't think you need go—

The Court: I just wanted to make sure because the claim runs from 120 to 390 degrees in Fahrenheit. I just wanted to make sure I understand it.

It has been converted in the claim?

Mr. Kaul: That is correct, Your Honor.

The Court: There is no argument about that, Mr. Parker, is there? There is no dispute about that? In other
37 words, the relation of the temperature appearing on this exhibit No. AP 1, there is no dispute that that relates, by way of conversion, to Fahrenheit, 120 to 390, is that right?

Mr. Parker: No argument whatsoever.

The Court: Thank you.

By Mr. Kaul:

Q. So at 63 minutes and two seconds, you applied the coating and what does the rest of the graph show here?

A. Immediately after, the temperature rose again in the surface but not very much but I found that the temperature—the interior temperature was still at the same level as when the paint was applied and remained there for a long period and first after—after a half hour, the temperature was down to room temperature again.

Q. All right. Now, let's turn to AP 2 which was the one that you did according to your process, I believe.

The Court: Wait a minute. This AP 1 is done according to the old process?

Mr. Kaul: That is correct, Your Honor. I think the witness testified that is done by deep heating.

The Court: Yes, I understand him to say that but I wanted to be sure.

38 By Mr. Kaul:

Q. Now, AP 2 is that done according to your process?

A. It is.

Q. Would you relate briefly what this curve shows? A. I exposed the Sample, AP 2 to a high intensity radiation so that the temperature of the surface rose up to 160 centigrades in a 30 seconds time, and immediately after ceasing the radiation, I applied the paint and found a drop of about 60 centigrades.

Q. That, of course, is more than 50 degrees Fahrenheit, is it not? A. Much more, yes.

Then a gradual drop down to room temperature after some further ten or 11 minutes.

Q. Now, would you turn to the very last graph in this report, and relate for us what that graph is intended to show.

Mr. Kaul: For the Court's convenience, we have made an enlargement of this graph.

The Court: Is that AP 10?

Mr. Kaul: No, the one after that, Your Honor. It is the last graph in the report.

By Mr. Kaul:

39 Q. That graph does not have a figure number on it but would you describe what that is intended to show? A. The first two graphs showed were the original graphs made by the recorder. As I changed the speed of the recorder, during the time, and it is fairly difficult to understand or to clearly see what happened.

Therefore, I had the graph converted so that I have equal distance for the minute or the same—

Q. Would you say that this is a comparative graph between the tests which you did on Sample AP 1 and by the old process and the Sample AP 2 by your process? Is this a comparative graph? A. It is.

Q. Let me point you to the enlargement here and you can also look at your own copy if you would like. Is this the curve, according to your process? (Indicating)

The Court: You are pointing to where?

Mr. Kaul: I am pointing to the red curve, Your Honor.

By Mr. Kaul:

Q. Mr. Levring, is this the— A. The red curve—

40 Q. Can you see this? A. That is the one in accordance with the process that I carried out.

Q. This curve shows that you heated up to a temperature of 160 degrees centigrade and put the coating on, and it dropped back down and is the process completed here at 13 minutes? A. Yes.

Q. At this point what has happened? Is it back to room temperature? A. It is back to room temperature.

Q. Is your process complete? A. The process is completed.

Q. Now, let's look at these other two, the green curve and the yellow curve, the top and bottom curve as they appear in the report. What are these two curves? Are they accurately labeled? A. They are.

Q. And the— the upper curve shows the temperature.

The Court: For the record, the upper curve is the green curve?

Mr. Kaul: The green curve.

By Mr. Kaul:

Q. What does the green curve show? A. Shows
41 the temperature of the surface.

Q. And the lower curve is the yellow curve?
A. Shows the temperature of the interior.

Q. So as you gradually started heating these, I note as they gradually creep along here and you have gotten up to about 60 minutes or so and they seem to be a pretty much differential between the two. What happens at this point here where the green curve suddenly crosses down? A. At that instance the paint or the lacquer was applied to the surface.

Q. And does that drop the surface temperature below the interior temperature? A. That is below. That is much below—that is as much below the interior temperature as it was above before.

Q. And it takes from this point all the way over here for them to cool down to room temperature? A. Approximately a half hour.

Q. Now, let me ask you what is the effect at this point of having the interior temperature higher than the exterior temperature? Does this produce any undesirable side effects? A. That is the reason why the lumber is
42 dried out or at least has not so much of its moisture content.

Q. That would actually be heating itself, would it not, that causes the loss of moisture content? What I specifically want to know is would this have any effect

on the coating that you applied at this point? This is the point where you applied the coating? A. It makes the coating poor because I still get heat from underneath that is undesired and the paint more or less is damaged by it.

Q. In other words, these defects, if you want to call them that, bubbles, whatever they are that appear on this sample Exhibit 3, is that caused by the fact that the interior here is a higher temperature than the surface after the coating is applied? A. It is.

The Court: What led you to conclude, as presumably you did, that the interior was critical? I assume you regard it as critical?

Mr. Kaul: I didn't hear whether you said interior or exterior.

The Court: I thought I heard him say that the interior temperature is very important to have that reduced considerably?

The Witness: Yes.

43 The Court: Because if it is high, you have a very bad result?

The Witness: Yes.

The Court: My question is: What led you to conclude, by virtue of your experiments, that the internal temperature, so-to-speak, was critical? I am assuming it is.

The Witness: Yes, it is.

The Court: What led you to conclude that?

The Witness: Because I always had or in most cases I had such bad results when I had a high temperature inside, in the wood, and the very moment where I only heated superficially, I got the good results.

The Court: I see. Thank you.

Mr. Kaul: Would Your Honor like to look at this?

The Court: Yes, please. They are in evidence, I take it?

Mr. Kaul: They will be introduced into evidence after I have—

The Court: All right. Probably at the end would be much better, and so any further exhibits you may relate to by way of marked for identification, and then at the end you may offer them if there is no objection.

44 Mr. Parker, have you seen these?

Mr. Parker: No, I haven't. May I see these, please?

(Mr. Parker examined the exhibits at this point)

The Court: Have you any further exhibit that you want to introduce at this moment that counsel ought to see?

Mr. Kaul: Yes, Your Honor.

The Court: Then I will give the reporter a little rest and so we will take a ten minute recess.

Mr. Kaul: All right. That might be a good idea.

The Court: Perhaps we better make it fifteen minutes and if these gentlemen want to go down and get a cup of coffee, they may do so.

All right, we will take a recess for fifteen minutes.

(Whereupon, a short recess was taken.)

The Court: All right.

Mr. Kaul: Your Honor, I would like to correct the record.

It was pointed out to me during the break that Mr. Levring had initially testified as to his education that he had a technical high school degree, and I think that is what the record shows.

By Mr. Kaul:

45 Q. Would you perhaps elaborate upon that a little bit, Mr. Levring, and explain what a high school education in Denmark means?

The Court: I understand that. That is the same as a high school education generally, is it not? You graduated from a technical school and you characterize it as a high school but it is not a high school in the strict sense?

The Witness: It is in actual fact our technical university.

The Court: I did not misunderstand him.

Mr. Kaul: I misunderstood him.

By Mr. Kaul:

Q. Mr. Levring, you were testifying as to exhibits 3 and 4 here, and we have gone through your test results of exhibit 2, and let me again show these to you and get a quick summary of this again.

Let's look at exhibit No. 4, and this is the one that is done according to your process? A. That is the one that is in accordance with my process.

The Court: That is No. 4?

Mr. Kaul: Yes, 4.

By Mr. Kaul:

46 Q. What was the heating time on there for that process? A. 30 seconds.

Q. What was the heating time for the other exhibit which was AP 3? A. 6, and—

The Court: You mean the green one?

Mr. Kaul: The green or yellow one.

The Witness: That was 63 minutes.

By Mr. Kaul:

Q. 63 minutes? A. Yes.

Q. The total time for your entire process here for your red curve was what? A. It was 13 minutes.

Q. And the total time for exhibit No. 3? A. About 100 minutes.

Q. I just want to emphasize that point, the radical difference in time.

Mr. Kaul: Your Honor, we have shown all of these exhibits to counsel for the defendant.

I thought we would go through all of them, and introduce them into evidence when we completed going through all of them.

47 The Court: Why don't you put them in at the end.

Mr. Kaul: All right.

The Court: They will be identified in the course of the case.

Mr. Kaul: Yes, Your Honor.

By Mr. Kaul:

Q. Now, Mr. Levring, turning in your report here to the table at the end of it which is marked—which is on page or side 7.

I note here that you have set forth a table with various samples, AP 1 through AP 11. Now, we have already discussed exhibits 3 and 4, those samples identified as AP 1 and AP 2.

I would now like to ask you whether the rest of these tests which is AP 3 to AP 11 were run generally with the same procedures, and the same equipment, the same finishes and so on as set forth in detail in your report.

A. They were run in the same equipment. I shorted off the heating time for the deep heating from 60 minutes to 40 because you see on the graph that there is practically no difference in the last 20 minutes in the temperature recorded on the surface.

48 Q. So the rest of these deep heating tests were run— A. About 40 minutes.

Q. Yes. Now, I would like to show you two samples marked as plaintiff's—

The Court: Referring to the table on Side 7, is that it?

Mr. Kaul: Yes.

The Court: Now, again, more by way of information than anything else, Blitsa, what is that finish?

The Witness: That is a synthetic finish that is a lacquer.

The Court: That is enough.

The Witness: Urea melamine—

The Court: I am familiar with melamine.

Mr. Kaul: In the report itself, Your Honor, in the early pages, about 1 through 5 is detailed all of the equipment and all of the finishes and the wood.

The Court: And after Table 7, there are pictures of the equipment, is that correct?

The Witness: Yes.

By Mr. Kaul:

Q. Now, I will show you two samples marked for
49 identification as Plaintiff's exhibits 5 and 6, and ask if you can identify those for us? A. I can. Five, was heated in accordance with the green-yellow curve up to the point of 40 minutes and after that, nitrocellulose was applied to the surface, and here is the result.

The Court: Excuse me. Are we through with this blackboard now? If we are, we can get it out of the way.

Are you putting the graph into evidence?

Mr. Kaul: No, a smaller copy of it forms a part of the record, or the report.

The Court: I see. Are you going to use it again?

Mr. Kaul: No.

The Court: Put it over there so we can all see what is going on here.

Mr. Kaul: All right.

The Court: Now, we are through with exhibit 5?

The Witness: Yes.

By Mr. Kaul:

Q. How about exhibit 6? A. Exhibit 6, Sample AP 4, was with the same nitrocellulose.

50 Q. How long a heating time? A. 30 seconds.

The Court: That is your process?

The Witness: That is my process.

By Mr. Kaul:

Q. In other words, if we were to compare Exhibits 5, and 6 here, six being with your process and five being with

the known techniques, the wood and the coating material is all the same, is that correct? A. That's the same.

Q. The only difference is the heating times? A. Yes.

Q. This one was 40 minutes, is that right? A. Heating times and intensity.

Q. Heating times and intensity? A. And temperature of the surface. In actual fact, this temperature is much higher than that one. The good one, the temperature of the surface on the good one, on my one was much higher.

The Court: You are calling yours the good one.

The Witness: Well, I am sorry.

The Court: That is exhibit 6, for the record.

51 By Mr. Kaul:

Q. How would you compare the difference in the results obtained on that, exhibits 5 and 6? A. Well, to look at the paint, the cellulose on exhibit 5 is distorted and on exhibit 6, is quite acceptable.

The Court: Have you seen these exhibits, Mr. Parker?

Mr. Parker: Yes, sir, I have seen them.

Mr. Kaul: We went through all of them at the recess.

The Court: May I see them, please?

By Mr. Kaul:

Q. Do you feel that exhibit 6 would be—the prior art one would be commercially acceptable and this is the—excuse me.

You had better make that exhibit 5 that I am speaking about. Do you feel that would be commercially acceptable? A. It is not.

The Court: Do I understand that exhibit 5 was subjected to the same type of testing except that the heating was 40 minutes?

The Witness: Yes.

The Court: And exhibit 6 same testing and same machinery and the heating time was 30 seconds?

Mr. Kaul: Yes, that is my understanding.

52 The Witness: That is accurate.

 The Court: Let me ask you this question, and here I am a novice: Suppose that the heating time in No. 5 was reduced to 30 seconds. What would you have? In other words, would it be the same as yours?

 What I am trying to ask is this: The heating aspect of the matter is critical?

 Mr. Kaul: That is wherein we allege the whole invention lies, I think, Your Honor.

 The Court: I wanted to make sure about it. All right, that is fine.

 I am not trying to confuse you. I confused myself momentarily that time.

 By Mr. Kaul:

 Q. Now, I am going to show you two samples marked for identification as plaintiff's exhibit No. 7, and 8, and ask you to look at this table in your report, exhibit 2 and see if you can identify these two.

 The Court: That is Side 7?

 Mr. Kaul: Side 7, Your Honor, is the table.

 By Mr. Kaul:

 Q. All right, let's start with No. 7.

53 The Court: Is that beech?

 The Witness: That is oak. That is laminated on pine.

 The Court: Where does that appear in the column?

 By Mr. Kaul:

 Q. Plaintiff's exhibit 7 is Sample No. what? A. No. 5.

 The Court: That is oak?

 The Witness: That is oak.

 The Court: What does the "b" mean?

 The Witness: "b"?

 The Court: In the table.

 The Witness: That refers to the laminated board.

 The Court: I see. Thank you.

By Mr. Kaul:

Q. Would you state for the court the test which was conducted on this exhibit? A. Yes. Without any kind of heating at all, I applied the same paint, and the drying time was fairly long with using no heat, and the appearance of the coat was not any good and that is what very often happens when you apply this type of paint or varnish to surfaces and you get bubbles.

Q. This was a test which was done with no heating
54 at all? A. Yes.

The Court: No heat at all?

The Witness: Yes.

By Mr. Kaul:

Q. What was this test intended to show? A. That on this surface with this paint, you get bubbles, blisters, and it takes a long time for the—

The Court: If you don't heat the sample?

The Witness: Yes. It is inclined to give these bubbles and blisters but using the system that I applied for, the patent, I can avoid these blisters.

The Court: Well, what you are saying is, by heating, the character in which you do heat it, you can avoid the blisters?

The Witness: Yes.

By Mr. Kaul:

Q. Now, how about plaintiff's exhibit No. 8? A. That is the same—heating the sapele—

The Court: Is that a form of wood?

The Witness: That is a foreign wood, an exotic wood, that is commonly used in Europe for doors.

By Mr. Kaul:

Q. Is that similar to our mahogany? A. Yes.
55 It is a kind of mahogany but it is fairly difficult to obtain a good surface or a good finish on top of the sapele. It is more sensitive to the treatment.

Q. So each of those exhibits, exhibits 7 and 8, were tested with no heating at all? A. Yes.

Q. And how would you describe the results of it being commercially satisfactory or not? A. No, they are poor.

The Court: That is what the table indicates, the result was poor.

By Mr. Kaul:

Q. Now, I am going to show you three samples marked for identification as plaintiff's exhibits 9, 10 and 11 which are respectively AP 7, 8 and 9, and I ask you to identify these starting with exhibit 9 and perhaps with all three of them, summarize for the court the nature of the tests which were conducted on them.

The Court: Now, we can save a little time, I suggest, if we have them already on Side 7 and we have, have we not?

Seven is the beech and the finish is blitsa, is that right?

56 The Witness: It is.

The Court: 40 minutes pre-heating time?

The Witness: Yes.

The Court: And then the result is poor?

The Witness: It is.

The Court: Then eight, that is beech?

The Witness: Yes.

The Court: And blitsa, again?

The Witness: Yes.

The Court: Heating time is 30 seconds and the result is good?

The Witness: Yes.

The Court: And nine, oak, finish is blitsa?

The Witness: Yes.

The Court: 40 minutes pre-heating time and the result is poor?

The Witness: That's right.

By Mr. Kaul:

Q. Finally, I have two final samples here marked plaintiff's exhibits 12 and 13, your sample AP 10 and 11.

The Court: Now, again—

Mr. Kaul: There is one further point which we
57 might—all the information in the table, I believe,

Mr. Levring has stated accurately but let's look at exhibit 12 and explain the internal structure of this build-up.

The Witness: That is one of the ways that doors are built-up. They are hollow and that is a piece of panel.

The Court: We have that here but not as nice as that.

The Witness: Yes.

By Mr. Kaul:

Q. What is this solid piece? A. That is a piece of the framework of the door.

Q. I see. A. And on both sides the boards are glued.

The Court: Is that exhibit 12?

Mr. Kaul: Yes.

The Court: And that equates with AP 10, does it?

Mr. Kaul: Yes.

The Court: You mentioned 10 and 11 and exhibits 12 and 13.

Mr. Kaul: It is samples AP 10 and 11, Your Honor, which are respectively exhibits 12 and 13.

The Court: I see, all right.

By Mr. Kaul:

58 Q. The reason I am asking you about this build-up,

Mr. Levring, is if you can explain if there is any problem or difficulties in coating over this piece as opposed to coating over a space? A. This AP 10 has been exhibited to heat—exposed to heat for over a long period with the result that the temperatures in the surface that are recorded varies fairly much during the—after the application of the paint, and that proves again, when we look at the surface, that the finish is poor, very poor where we

have the solid wood underneath and a little bit better at places where we have no further—where the material is.

Q. Over the spaces? A. Over the spaces, yes.

The Court: Now, let me ask a question, if I may: This is a hollow piece of wood, so-to-speak, and is the thickness of the board anything in the nature of critical whether the board is solid or laminated from the standpoint of the application of heat?

The Witness: Yes, it is. A long time heating, a deep heating, it is critical but using superficial heating, as I do in my system, there is no difficulty in obtaining the good result whether the panel has a solid piece under-
59 neath or is open.

The Court: I see.

By Mr. Kaul:

Q. Now, you talked about AP 10 which is plaintiff's exhibit 12, and that one is identified as having the 40 minute treatment? A. Yes.

Q. How would you identify the finish that you got on that? A. No, it is poor.

Q. How about AP 11 which is exhibit 13? A. It is acceptable.

The Court: I don't see AP 12 on this Side 7.

Mr. Kaul: I am sorry. AP 10, Your Honor, and that is exhibit 12.

The Court: All right.

Mr. Kaul: AP 11 is exhibit 13.

By Mr. Kaul:

Q. Now, I would like to refer you to this—in your test results here there are two figures in here, AP 10 and 11 appearing in the back and instead of going through these figures in detail, I might just ask you if they are comparable with—

The Court: Doesn't the table itself point up the situation?

60 Mr. Kaul: The table itself points up the situation.

The figures actually show a running time.

The table just gives the results. The graphs that he has at the end of the tests here, they give a running time starting from times zero extending all the way up to the end of the test.

I don't know if I have to question him in detail but I was just going to ask him if these were the same type of tables as were those in accordance with figures AP 1 and—Sample AP 1 and 2.

The Witness: They were. You can see where the thermocouples have been placed on the panels and from the graphs, it is, for a skilled man, possible to explain why the results are poor and good.

By Mr. Kaul:

Q. All right.

Now, summing up, we have gone through all of these various exhibits here. We have gone through all these and let me ask you if you can sum-up the results of all these tests and all of the samples by stating that the tests which were run in accordance with your process always produced what is identified here as good results and
61 the tests which were run with deep heating always produced what is identified in the table as either poor or bad results; is that accurate? A. It is accurate.

Q. And let me again ask you to emphasize the features which are accomplished with your process which were not accomplished with the deep heating process. First, let me ask you about time.

The Court: I think I should correct you on that.

The table does not refer to any tests characterized as bad. It is poor or good.

Mr. Kaul: Poor or good?

The Witness: Yes.

Mr. Kaul: I stand corrected.

By Mr. Kaul:

Q. Let me ask you to summarize the tests insofar as time was concerned. Your samples were always heated for how long? A. For around 30 seconds.

Q. And the other samples were always heated for how long? A. 40 to 60 minutes.

Q. Now, how about moisture content? Did your test samples show any marked difference in moisture content?

A. I tested several of them, and while the losses were approximately for the deeply heated, around 25 per cent of the moisture content was lost. It was only of the magnitude of one and a half per cent of the moisture content that was lost when I used my system.

Q. All right. Finally, as to the nature or appearance of the finish itself which was produced, did your method always produce a satisfactory commercially acceptable appearance? A. Commercially accepted.

Q. How about the deep heating test? A. Well, fairly poor.

Mr. Kaul: At this time, Your Honor, I would like to introduce into evidence plaintiff's exhibit 2 which is the laboratory report and plaintiff's exhibits 3 through 13 which are the various samples referred to therein.

The Court: They are in evidence.

(Plaintiff's Exhibits 2 through 13 were received in evidence.)

Mr. Kaul: Also at this time, Your Honor, I would like to state that I think it is stipulated between counsel that either side might have the right to withdraw these at any time hereafter and this is the only set of samples that we have and we were not able to give the defendant a copy.

63 I am referring to these. (Indicating)

The Court: Yes, I understand that. I will tell you quite frankly that I won't need them. I have seen them, and I have reference to them in the table and I will

leave them here until such time as you might want them.

Mr. Kaul: All right, Your Honor. I think it would be convenient to leave them here so the Solicitor can get them at any time that he might want to, also.

By Mr. Kaul:

Q. Mr. Levring, let me ask you how would you describe the acceptance of your invention by the industry? Has it been accepted at all by the industry?

The Court: All right.

The Witness: It has been accepted by the industry.

The Court: When you say the industry, do you mean Europe or the world or what?

The Witness: The European industry above all.

By Mr. Kaul:

Q. Is it in fact being commercially used in any countries? A. It is.

Q. Could you name the countries? A. Yes. In 64 Denmark, in Norway, in Sweden, in Finland, in England, in Belgium, in Germany, in Italy, in Russia, in Poland, in East Germany, in Romania and Yugoslavia.

The Court: What about Austria? You skirted all around Austria and left it out.

The Witness: I will be frank and say that somebody—

The Court: No, I was just curious.

The Witness: They are interested in Austria for the process but I feel that somebody is infringing.

By Mr. Kaul:

Q. Did you ever use any advertising or promotional techniques in the past in an attempt to sell your invention to the industry? A. Until, say half a year or a year ago, I did not.

Q. How did the industry find out about your invention? A. Well, in Europe, it is so that the people from the industry know each other, and when they learn of a system

utilized or used in one factory, they tell of it and I have the inquiries coming in.

Q. Now, you say within the last half year or so you—

The Court: Do you have patents on the subject
65 matter in Europe?

The Witness: Yes, I have.

The Court: In what countries?

The Witness: In Great Britain, above all. I had it but sold it.

The Court: Yes.

The Witness: In France, in Spain, in Switzerland, in Austria. It is applied for in West Germany. In Holland, in Denmark, in Norway and Finland.

The Court: I am curious why you didn't, as a Dane, apply for a patent in Denmark without going to Great Britain where you presumably did.

The Witness: I have applied for it and it has been published but we are fighting about it.

Mr. Kaul: I might explain to Your Honor that in Denmark and Germany, and some other countries over there, they have a system much like the trademark system in the United States.

After the Patent Office allows the application, instead of getting the patent immediately, they publish it for opposition and any interested party can come in and try and oppose getting the patent.

The Court: You ought to put the numbers of the
66 patents into the record.

Mr. Kaul: I hope we have them, Your Honor.

The Witness: I have the patent in Austria.

The Court: I understood you to say Austria, Switzerland, Great Britain, France and Spain, and you have patents in those countries?

The Witness: Yes.

By Mr. Kaul:

Q. Do you have those patents with you, Mr. Levring?

A. I have.

The Court: You may put them in the record later on and we will discuss them later on. Thank you.

The Witness: But I can't leave the patent here.

The Court: No, I don't want you to leave the patents here.

Mr. Kaul: Just the numbers.

By Mr. Kaul:

Q. You stated that you prepared some promotional literature within the last six months or so and I would like to show you these two documents marked for identification as plaintiff's exhibits 14 and 15 and ask you to identify them. A. Yes.

67 Q. Let's start with 14.

Q. By my firm.

Q. What is 14? A. 14, that is an introduction to the finishing process described in my patent application here.

Q. Would you say it is a commercial summary of it?

A. A commercial summary of the system.

Q. How about exhibit 15? A. It shows pictures from one of the very big plants we have put up in Denmark at Junkers Floorboard Factory.

Junkers manufacturers floorboard in Europe.

Mr. Kaul: At this time, Your Honor, I would like to introduce into evidence exhibits 14 and 15.

Mr. Parker: No objection.

The Court: They are received.

(Plaintiff's exhibits 14 and 15 were received into evidence.)

By Mr. Kaul:

Q. Mr. Levring, you just testified for the court as to the use of your invention in many different countries in Europe.

Have you granted any rights in your invention in the United States?

68 Did you hear that question? A. Yes.

Q. I said, have you granted any rights under your invention within the United States?

The Court: Have you licensed anybody?

The Witness: No, I have not.

By Mr. Kaul:

Q. Have you been approached by anybody? A. I have been approached by some firms, yes.

Q. All right. Have any United States firms shown any interest in your invention? A. Yes, and I am in actual fact going to see one of these firms during my visit to the United States here.

Q. Is there any reason why you haven't granted any rights in the United States yet? A. Yes, because I have no protection.

Q. Now, may I refer to Exhibit 1, that certified copy.

Shortly after the argument at the Patent Office Board of Appeals, I received from your Danish attorney and filed in the Patent Office, which now forms a part of the certified copy, a list of various factories in which your process has been installed in various countries and
69 the amount of production by these companies.

This appears at pages 143 and 4 of the certified copy and I would like to show you the list and ask you if you prepared the list for— A. Well, I prepared myself the—

The Court: Is that the File Wrapper?

Mr. Kaul: That is the File Wrapper. It is exhibit No. 1 for the record.

The Witness: I had it checked by the staff of mine in Copenhagen and that is—

By Mr. Kaul:

Q. Would you read the total board feet that had been or meters, whatever it is there, that has been processed by your invention at the time that this list was prepared? A. Yes, 167,500,000 square feet, approximately.

The Court: Square feet or board feet? Board feet, as I understand it, is the length by the width by the thickness in inches.

The Witness: This is square feet, Your Honor, surface.

The Court: I am sorry. I misunderstood you.

Mr. Kaul: This is square feet.

By Mr. Kaul:

70 Q. And this is over one billion square feet that has been coated by your process? A. Yes.

Q. And this was some months ago when this list was prepared? A. Yes.

Q. Based upon this rather large use and treatment by your process, and based upon the fact that it is being used in many countries, and by many different industries, would you regard your invention as being commercially successful? A. I will regard it as being commercially successful.

The Court: Did you say I will or I do?

The Witness: I do.

By Mr. Kaul:

Q. Do you regard it as having any significant impact on the industry? A. Well, it has been a help to them.

The Court: I would conclude that if the method is as claimed, then certainly the curtailment of the time element would be very material, and very commercially productive of success.

Mr. Kaul: Our other witnesses will most certainly testify to that, and they use the process commercially.

71 The Court: I mean it would be very much of a success from the standpoint of the economic factors involved.

I believe Mr. Parker would agree to that, would you not?

Mr. Parker: Sir?

The Court: I said I think you would agree to that. If there is an invention, presumably it would be commercially successful in the industry.

Mr. Parker: Yes, if there is an invention.

The Court: You won't need to go into that. I will conclude that it is now successful commercially, and would be successful commercially in this country if you get the patent.

Mr. Kaul: All right. Might I ask him one final question on that?

The Court: The commercial success doesn't in any way control the fundamental issue involved as to whether or not there is an invention. It is part of the general picture.

Mr. Kaul: That is correct, Your Honor. Of course, commercial success has been thrown around by many courts many different times, and it is our understanding—

The Court: I am impressed by it but—

Mr. Kaul: We say it has a bearing on the issue of obviousness.

The Court: It is a piece of evidence in the picture
72 but it is not controlling.

Mr. Kaul: I think what we are trying to establish, Your Honor, is that it most certainly can be stimulated in many instances.

The Court: It is a natural inclination and curiosity on the part of the industry to find out more about it if you want to put it that way but don't take my words.

Mr. Kaul: I would say it is not only a natural inclination on the part of the industry, Your Honor, to find out more about it, but the fact when they found out more—

The Court: They used it.

Mr. Kaul: They used it.

The Court: This is a billion square feet.

Mr. Kaul: It is not like a product where there is heavy advertising that forces it down their throats.

The Court: I read you loud and clear.

Mr. Kaul: Let me ask him one final question.

By Mr. Kaul:

Q. What amount of income would you say that you have obtained from this invention up to the present time? Can

you give us an approximate figure? A. Oh, about—

73 The Court: Would this be in Danish Krona?

The Witness: May I make it in Danish Krona?

The Court: You had better put it in American dollars if you can, please.

The Witness: Around one-million dollars.

Mr. Kaul: We have no further direct examination.

Mr. Parker: Shall I proceed, Your Honor?

The Court: Yes.

Cross-Examination

By Mr. Parker:

Q. Mr. Levring, you indicated that you are familiar with the application at bar, the application filed in the United States Patent Office? A. The application?

Q. Yes, the application, Plaintiff's Exhibit No. 1.

The Court: That is the application of Gard?

The Witness: Gard, yes, I know that, yes.

Mr. Parker: The application at bar, Your Honor.

The Court: What did you say?

Mr. Parker: The application at bar, his application, plaintiff's application.

The Court: I thought you were talking about a
74 patent in Gard.

Mr. Parker: I want to talk to him just a moment about his application, the application at bar.

The Court: At bar?

Mr. Parker: Yes, sir.

The Court: I understand you now, but I got a little mixed up with the way you put it.

The application at bar. Do you understand that, Mr. Levring?

The Witness: I do understand it.

By Mr. Parker:

Q. And you are familiar with the claims in your application? A. I am.

Q. All right. Is there anything in those claims whatsoever that discussed the moisture content of the wood itself?

A. No.

Q. Nothing whatsoever? A. As far as I know, no.

Q. Is there anything in the specification of the application that relates to the moisture content of the wood per se? A. So far as I remember, there is not. I
75 can't say for sure.

The Court: Why don't you show the witness the exhibit.

Mr. Parker: May I pass up, with Your Honor's permission, plaintiff's exhibit No. 1 and ask you to refresh your recollection.

The Court: That is the File Wrapper, again?

Mr. Parker: Yes, the File Wrapper. I am sorry.

The Court: Now, you are directing yourself to the claim, Mr. Levring, and also the application?

The Witness: Yes.

The Court: The question originally was, as I understand it, whether or not the moisture content was discussed in the claim and your answer was no.

The Witness: I am not sure.

The Court: Why don't we do this, Mr. Parker, if I might make a suggestion: It is only ten minutes left, and we will recess for the luncheon period, and we can give this gentleman an opportunity to examine the File Wrapper again, and again, Gentlemen, I am alluding to my own situation.

This meeting that I am attending is in the court house and I am not going outside, but this is scheduled for
76 2:00 o'clock, and I do not want to rush you in any way but it will probably last about an hour. I can come back here at 3:00 o'clock.

Mr. Kaul: We would be happy to come back, Your Honor.

The Court: The only thing, I want to express again, is that you don't conclude in those circumstances that we can finish the case today.

Mr. Kaul: No, Your Honor, I don't conclude that.

The Court: So, therefore, I would assume, and it is merely an assumption on my part, that perhaps you would rather call it a day now rather than come back for an hour and give you tomorrow.

I have all day tomorrow, and you would not have to return here until after my calendar call which should be finished at 10:00 o'clock.

Mr. Kaul: Either way.

The Court: All right.

Mr. Kaul: We would not mind returning at 3:00 o'clock but whatever would be more convenient for Your Honor.

The Court: It makes no difference to me. If you want to come back here at 3:00 o'clock, that is fine.

Mr. Parker: We are at the convenience of the Court.

77 The Court: I don't want you to put it that way.

Why don't you talk it over now with each other.

Mr. Parker: Well, I have indicated that we are willing to stay this afternoon or we will come back. I understand that he has some witnesses from out of town and we will adjust our schedule.

The Court: All right. I will be back at 3:00 o'clock.

Mr. Kaul: Shall we now consider that we are in recess until three o'clock?

The Court: Yes, and I want to give the witness an opportunity to familiarize himself with the File Wrapper.

We will adjourn at this time for lunch and then come back at three o'clock. This meeting I have was scheduled some time ago, and I have no control over it. I have to be there.

Mr. Parker: May we have just a moment, Your Honor?

The Court: Yes.

Mr. Parker: Your Honor, we can come back tomorrow if it meets with your approval.

The Court: That meets with my approval. My schedule is a peculiar one. I have to be here at 9:30 and you were here at 9:30 so you can see what we go through here every morning.

78 Rather than have you here at 9:30 and be subjected to the ordeal we have every day, why not be here at 10:15 and I should be finished by that time, and you can have the balance of the day.

Mr. Kaul: May I ask Your Honor one other question?

On the assumption that we might run a little bit late tomorrow, what I am worried about, Your Honor, the witnesses all have—

The Court: We will finish tomorrow.

Mr. Kaul: All right.

The Court: No matter how late we run, we will finish tomorrow.

On Wednesday's I have Mental Health cases which doesn't mean a thing to you but they are the people at St. Elizabeths Hospital who have been committed there, and they want to get out. They usually ask for jury trials, and they are held on Wednesdays, but if I have those tomorrow, I will not hear them. I will send them elsewhere.

In the afternoon, I may have an extradition matter. I have to sit as the Governor of the District of Columbia under the statute, and that will take about five or ten minutes, and I will not know if I have one of those until 11:00 o'clock tomorrow morning.

79 Mr. Jacobi: We can finish our case tomorrow?

The Court: Yes, you can finish your case tomorrow.

If anybody has a commitment elsewhere, I will get them on a train or a plane or boat but we will finish tomorrow.

Mr. Jacobi: Thank you.

The Court: We will recess until 10:15 tomorrow morning and we will begin then and we will stay until we finish.

Mr. Kaul: Thank you, Your Honor.

The Court: Does that meet with your satisfaction? I will give you an hour this afternoon if you want it.

Mr. Jacobi: No, I don't think we would accomplish too much this afternoon.

The Court: All right.

(Whereupon, at 12:28 p.m., the court adjourned to reconvene at 10:15 a.m. the following day.)

80

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

Civil Action No. 2499-65

HELGE ERIK LEVRING, *Plaintiff*,

v.

EDWARD J. BRENNER, As Commissioner of Patents,
Defendant.

Wednesday, June 15, 1966.

The above-entitled matter came on for further trial before the HONORABLE CHIEF JUDGE MATTHEW F. MCGUIRE, United States District Judge.

APPEARANCES:

(As heretofore noted.)

81

PROCEEDINGS

The Court: Good morning.

Mr. Levring, if you will resume the stand, we will continue with cross-examination.

Mr. Parker: With Your Honor's permission, I will ask the Clerk if she would read back the last question.

(The last question was read)

Helge Erik Levring

resumed the witness stand, previously sworn, testified further as follows:

Cross-Examination (Cont'd)

By Mr. Parker:

Q. Mr. Levring, have you had an opportunity to review—

The Court: Let me make a suggestion to you. If you hug that microphone, we are in trouble. If you stand back a little bit, it will be fine.

By Mr. Parker:

Q. Mr. Levring, have you had an opportunity to review the claims? A. I had an opportunity to review the claims, yes.

Q. Is there anything—

The Court: I have to say the same thing to you.
82 This apparatus is not very good and if you turn it a bit to your right we will be able to understand you better.

The Witness: Is that better now?

The Court: Fine.

By Mr. Parker:

Q. Is there anything in the claims relating to either the moisture content or the moisture balance? A. Nothing in the claims.

Q. Is there anything in this specification relating to either the moisture content or the moisture balance of the wood used? A. Yes, there is.

Q. Would you refer to that section of the specification, please? A. I haven't got the files here but I went through it, and I observed that I have made some notes, and—

The Court: You may examine the file.

Mr. Parker: I will pass you a copy of the File Wrapper here.

The Court: What is the exhibit number?

Mr. Parker: Plaintiff's exhibit No. 1.

The Court: All right.

83 The Witness: On page 4, I see under the second—well, on line 10, I am asked for tests.

“Tests have proved that the material, e.g. wooden boards. Treated in a method according to the present invention has no remarkable tendency to warp, and that the wearing quality not only of the coating applied to the surface of the”—and so on but I mention that it has no remarkable tendency of warping.

By Mr. Parker:

Q. And this is the only reference to moisture content in the specifications you see? A. No, not to moisture content because I start up saying that the invention relates to a method of applying coatings to the surfaces of porous materials of poor heat conductivity such as wood, etc. etc.

Later on, "consider a predetermined temperature considerably above ordinary room temperature in order to cause the air within the pores of the said surface to expand and a great part thereof and of undesired humidity contained in said pores to be driven off."

Q. Where are you reading from? A. Page No. 1.

84 Q. All right. And you talk in terms of humidity in general. You have no percentages of humidity mentioned there, is that correct? Do you see any numbers of that page whatsoever? A. There is no figure.

Q. No figures? A. On humidity, no.

Q. Thank you very much.

Now, Mr. Levring, I would like for you to turn, if you will, to the coating itself.

As I understand it, you cool your wood very rapidly and that is the purpose of this cooling, this rapid cooling, Mr. Levring? A. The application of paint—the paint applied to the surface cools down the surface.

Q. And does this not cause the air in the pores of the surface to contract itself so that some of the paint or lacquer can be absorbed into the pores of the surface? A. Into the pores of the surface under the—absolutely the top of the surface, the superficial part of the piece, yes.

Q. But into the pores? Into the superficial— A. 85 Yes.

Q. So it does impregnate the surface, does it not? A. It impregnates the pores in the surface.

Q. Thank you very much.

Now, we will move on, with Your Honor's permission to— A. May I add one thing? That is not a question of impregnation as such as it is understood in any of the

other patents. There is talk of a real impregnation of the piece of timber.

The Court: How do you make the distinction? We are using a word that is in common usage, and from your standpoint, it has a different meaning?

The Witness: Yes.

The Court: Well, will you make the distinction, please?

In other words, you are saying, as I understood you, that when you use the term impregnation in the other patents, so-to-speak, it relates to impregnation of the whole piece. Is that it?

The Witness: To almost the whole piece.

The Court: What is the distinction in your approach?

The Witness: That I only impregnate the little fibers that are in the upper layer of the piece of timber.

86 The Court: So it is a question of the depth of the impregnation?

The Witness: Yes.

Mr. Parker: May I continue, Your Honor?

The Court: Yes.

By Mr. Parker:

Q. Is there anything in the claim, and I have passed you up a copy of the claim, and this appears in the File Wrapper, Your Honor, at pages 98 and 99, and you have a copy of those in front of you if you will turn to those.

The Court: What is the question?

By Mr. Parker:

Q. I would ask you if there is anything in the claim relating to the depth of impregnation? A. Yes.

Q. Would you read that? I am looking now at Claim 9 on page 98 of the record.

That is a file wrapper. I am sorry.

Would you take a moment to read it silently and see if—

The Court: Mr. Levring, read it first.

The Witness: To myself?

87 The Court: Yes.

We will have to stop for a moment. I have to answer a call.

In the mean time you may read it, and I will only be gone for about five minutes.

(Whereupon, a short recess was taken.)

The Court: Now, we will have no further interruptions that I can imagine.

Mr. Parker: Would you read the last question back?

The Court: You asked if there was anything in Claim 9 of the depth of impregnation.

Mr. Parker: Yes.

The Witness: As this process is a sophisticated process, it is very difficult from a physical point of view to point out what I do understand by superficial heat.

Mr. Parker: With Your Honor's permission, may I just repeat the question?

By Mr. Parker:

Q. I would ask again if there is anything in the claim relating to the depth of impregnation of the coating material? A. For the physician, for the man skilled in the art, for a man who has studied the problems, the limits given in the temperatures, the time, and the drop of the temperatures stated here tells of the depth of heat, and thereby the possibility of impregnation.

Q. Now, would you translate that in terms that we can understand? Is it $\frac{1}{8}$ of an inch, $\frac{1}{16}$ of an inch or any fraction of an amount? A. I can in actual fact because I have measured it but it varies a little here as the limits here are varied but it is of a magnitude of between 10 and 25 microns.

Q. But you don't find that figure anywhere in the claim, do you?

The Court: Well, you will have to relate that in some fashion to me in linear measurements. I know from the word microns that means very small amount?

The Witness: Yes. 25 microns relates to one-thousandth of an inch. It is one one-thousandths of an inch.

The Court: All right. You characterize that situation as superficial?

The Witness: I do.

By Mr. Parker:

Q. But we do have some impregnation however small, is that correct?

89 We have some penetration?

The Court: You use the term impregnation and now you use the term penetration.

By Mr. Parker:

Q. Have some impregnation, do we not, in this case even though you characterize this as one one-thousandth of an inch or 25 microns, but we do have some impregnation?

A. Yes, I think so but it is not what is commonly understood by impregnation.

Q. Thank you very much. Now if we may move on to the art, you have indicated that you are familiar with the prior arts, is that correct? A. I am. I think so.

Q. All right. Now, we will pass you the exhibits in this case, and I will be referring to these and we will identify those a little later, with Your Honor's permission.

I would ask you, as we go into the exhibits, to have on the one hand page 98 of the record, that is, of the File Wrapper, Plaintiff's Exhibit No. 1, that has in it the claim that you just turned to.

Do you have the claim before you?

The Court: What exhibit or claim is this?

90 Mr. Parker: That is Claim 9. It appears on page 98 of the File Wrapper.

The Witness: Yes.

By Mr. Parker:

Q. Mr. Levring, do you have that before you? A. I have it, yes.

Q. Now, I would ask you to turn to Exhibit "A" in Defendant's Exhibit 1. That is paper No. A.

The Court: Is that the Aylsworth patent?

Mr. Parker: Yes. It is Patent No. 1, 139,470.

By Mr. Parker:

Q. Do you have that before you? A. Yes.

Q. Now, may I ask you, Mr. Levring, to read the first two lines of that claim, of the claim which appears on page 98 of the File Wrapper, Claim 9. A. This is mine here.

"A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating"—

Q. That is enough for the moment. Now, turning if you will, to paper A, the Aylsworth Patent, and I would ask you to look, if you please, to page 1, Column 1, lines 40 to 47.

91 Do you see those? A. Yes.

Q. Now, I would ask you if you would read those lines aloud please? A. Yes. "In its broadest aspects, the process consists of the following steps: First, the substance to be coated is heated at a sufficient temperature and for a sufficient length of time to thoroughly dry the same and to expand the air and gases in the pores or interstices of the substance."

Q. So in this process, as portrayed by Aylsworth here, we do have heating—I am sorry. Coating the surface of a wooden article. Do you agree with that? A. Yes.

Q. And I want you to read, if you will, in column 2, line 97 the first two words. A. "The lacquer, varnish or enamel composition used, which I will refer to generally as a varnish composition, preferably comprises a phenol or cresol resin, such as that"—

Q. That is all I want.

Now, you use a lacquer. Does Aylsworth use a lacquer, also, in view of what you have just read? You use a

lacquer as a paint, is that correct? A. I use a lot
92 of—almost all kinds of lacquers and paint.

Q. Take a look at the claim again, as claimed. A.
Yes, I mention a lacquer.

Q. Does Aylsworth mention a lacquer in what you just
read? I am again looking at column 2. A. Yes.

Q. Line 97 and he uses a lacquer? A. He mentions a
lacquer.

Q. Now, you said in your case that you superficially
heat, is that correct? A. Yes.

Q. And in his case he heats enough to dry the wood
used, is that correct? A. Yes.

Q. Now, this is the difference. Now, I will ask you to
look at Aylsworth in column 2, line 69. Read that to your-
self and see if we can get the temperature that Aylsworth
heats a wood to. A. "The wood is first dried for several
hours at 220 degrees F. or higher, preferably about 250"—

Q. That is correct. What temperature does he use there?

A. 250 degrees Fahrenheit for several hours, and
93 that is to my opinion just exactly misleading any
scientist who would work on the job. If he followed
the idea of this, he would be extremely bad off, I am sorry
to say.

Q. I ask you again, what temperature does he use there?

A. 250 Fahrenheit.

Q. Fahrenheit? A. Yes.

Q. Now, is this within the range of your temperatures?
I again ask you to look at the claim. A. I know it is, yes.

Q. This is within the range of your temperature, is it
not? A. It is.

Q. All right. Now, so the difference between what Ayls-
worth has and what you have is that he uses a longer
time to dry up his wood, is that correct? A. Yes.

Q. Now, I would ask you, if you will, to turn in the ex-
hibits, defendant's exhibit 1, page—paper E, and this is
the binder that you have on your left, exhibit E, and in
exhibit E we have the patent for Taylor which bears the
number 448,240.

The Court: Mr. Kaul, you can stand and assist
94 him if you want to.

Mr. Kaul: I think that number is wrong. I am
sorry.

Mr. Parker: May I correct the number on the patent?
I gave the application serial number instead of the patent
number. The correct patent number is 1,435,031.

This patent again is the patent to Taylor that appears as
Paper E in Defendant's exhibit 1.

By Mr. Parker:

Q. Do you have that before you? A. That is correct, yes.

Q. Now, I would ask you to read from that patent the
paragraph that begins in column 1, the sentence, rather,
that begins in column 1, line 31, the first two words, the
end of the logs. A. "The ends of the logs are then rapidly
heated by a blast of hot dry air or by the application of a
heated plate of iron for a few seconds of time or by any
other suitable means to a temperature above the tempera-
ture of the liquid"—

Q. So his heating time here and I would ask again—his
heating time is just a few seconds, as you understand it, is
that correct, in the Taylor patent? A. Yes, I do.

95 Q. Now, I want to go over to column 2 here and
before going there, I would like to get a little back-
ground about the Taylor patent.

Taylor is concerned here with the coating operations is
that correct? A. No, he is not with the coating operations.
He is applying some wax and impregnating a lump to—
well, to get some special impregnation to avoid the log to
sink when it floats down the river. It has nothing to do
with a finish at all.

Q. With finish? A. No.

Q. Does it cover the surface of this piece of wood? A.
With wax.

Q. What does it cover? A. When you are giving a
finish—I am sorry.

The Witness: "By heating the wood dielectrically, two important advantages are derived over conventional drying methods. First, it is possible to rapidly completely dry the wood by a substantially uniform generation of heat at an extremely low temperature, compared with normal commercial practice, and thus eliminate end grain checking and cracking, even though the wood initially contains an extremely large amount of water."

By Mr. Parker:

Q. That is as far as I would like for you to go.

In the Aylsworth patent it took us a long number of hours to dry the wood, did it not? A. Yes.

Q. And Aylsworth mentioned this as being several hours, does he not? A. Yes.

Q. He was interested in drying the wood prior to the coating operation.

Now, if we used the dielectrical type heating
100 taught by the Gard patent, would we not be able to reduce the drying time? A. Yes, but you are—I am not interested in my patent at all to dry the wood, and that is what has been stated.

I am interested in taking the humidity out of the upper surface of it but I will spoil the whole job if I am drying the wood. It is quite against my teaching.

Q. Is there anything in the claim, again, that relates to removal of a percentage of humidity from the upper surface of the wood? A. In my claim?

Q. That is correct. A. In my opinion, it should not be necessary because to my opinion, to a man skilled in the art, would realize the necessity of keeping the moisture content that has been obtained through the processing of the items for furniture or doors and not bring that out of balance by the finishing process. This is the essential matter.

Q. Now, could we move on for a moment, please, and turn, now in the same patent, to column 4. A. In the Gard patent?

101 Q. In the Gard patent, column 4, line 16. A. Yes.

Q. Does not this tell us that using dielectric heating, usually in five to ten minutes we can dry out the wood? A. Yes.

Q. All right. So now if we use the teaching of Gard, that is, the new dielectric heating, to dry the wood used in the Aylsworth patent, we could then get this wood into condition for coating in five to ten minutes, could we not? A. As working on physics, I don't quite understand what is meant by the question.

Q. Could I break it down a little bit for you?

The Court: You still might not be able to communicate with him if you break it down. You might re-phrase it.

Mr. Parker: Re-phrase it, Your Honor?

The Court: Yes.

By Mr. Parker:

Q. Now, in the Aylsworth patent, we are interested in drying prior to coating, is that correct? A. In Aylsworth, yes.

Q. Now, in this patent it takes several hours to dry, does it not? A. That is correct.

102 Q. And this length of time is due to the method used by Aylsworth, is it not? A. Yes.

Q. He uses a blast of air or some other method to dry his wood and it takes him a long time to do it? A. Yes.

Q. Now, in the Gard patent, they teach us that we use dielectric heating, does it not? A. Yes.

Q. And it says that if we use dielectric heating, we can appreciably reduce the time required to dry out a piece of wood, does it not? A. That is correct but he doesn't teach me how I can superficially heat a piece of wood dielectrically.

Q. Does it teach you what I just pointed out? You can dry it in a lesser period of time, a shorter length of time when we compare it with several hours? The Gard teaches us that if we use dielectric heating, it does not take us as

long to dry out a piece of wood, does it? A. It teaches me one thing if I am allowed to say so. If I use dielectric heating, I can spoil the item much faster than Aylsworth has.

103 Q. I am sorry, I didn't get the answer.

The Court: If he uses dielectric heating as related in the Gard patent, he can spoil the piece much more quickly than if he used Aylsworth.

By Mr. Parker:

Q. It tells us that in ten minutes we can dry it out? Do you admit that? A. Yes, but I don't want to dry it out. That is what I stated.

Q. I am asking what this patent teaches and not what you would like to do. We will get into that a little later.

The Court: All he is asking you, Mr. Levring, is what this patent says in relation to heat, and not what you think should be said. What does Gard say?

The Witness: He says by means of dielectrical means can heat timber faster than by conventional—

The Court: Hot blast?

The Witness: For instance, by blast.

By Mr. Parker:

Q. I want to move on now in the Gard patent and I would like to ask one or two other questions. Is there anything in your claim relating to the initial moisture content of your lumber?

104 What I am getting at is here—I will re-phrase the question in a moment after I give you this background.

Do you start with any initial moisture content because it appears to me—I will break off and ask the question.

Would it not take a little longer to dry out wood that has a 25 per cent moisture content from wood that has a 10 per cent moisture content? Make that 2 per cent moisture. A. It is—

The Court: According to his method or the other method?

The Witness: I don't dry out the timber.

By Mr. Parker:

Q. You are starting with a piece of wood? A. Yes, with the correct content of moisture.

Q. How much moisture? A. It depends on where the item is to be used and what kind of timber—what kind of article it is.

Q. And can you give me some outside ranges as to your moisture content? A. Yes. In my laboratory report, I have already mentioned one for beech wood, for flooring, around 6.5 to 8 per cent. That is the limit the moisture content is kept.

105 Q. Now, is this— A. That is in our country.

Q. Now, is this wood that has come to you directly from the field or has it had some drying before it gets to you? A. It has been dried and conditioned before it has been machined, prepared for the finishing.

Q. Again, I ask you to look at your claim. A. Yes.

Q. And tell us whether or not there is anything in the claim that requires a pre-drying prior to the time it gets to you? A. No.

Q. So you are just coating a piece of wood and insofar as this claim is concerned, that piece of wood could be a log, a log right out of the field or it could be a piece of pre-finished wood ready, after your coating operation, to go into commercial use? Again, I am looking at the claim and the claim is on page 98 of the File Wrapper. A. I am sorry. I am not a patent specialist, and so I don't know if there are any certain rules concerning—if I have to add to my claims further purposes and all the reasons for claiming them, I—

106 Q. Could you just take a moment and look at it and see if you find anything that requires it to be pre-heated or not pre-heated or any limitation before it goes in the process. A. No, there isn't as far as I can see.

Q. Now, I am still in the Gard patent, and Gard relates to an impregnating process, also, does it not? A. Yes.

Q. Now, Gard teaches— A. Gard teaches an impregnating system.

Q. Now, I want to turn or talk for a moment about the difference between the temperature of the impregnated and the wood as it is immersed. Does not Gard teach us that we should have a 50 degree differential there, and I would ask you to read, if you will, column 5, lines 22 to 25. A. "A temperature differential of at least 50 degrees Fahrenheit should exist for economical commercial practice with most woods and usual impregnants."

Q. All right. Now, in the last line of your claim, it requires the drop of at least 50 degrees in the temperature differential, does it not? A. It requires a drop but it doesn't require necessarily a temperature differential between the surface of the wood and the lacquer I
107 apply.

Q. Would what is disclosed by Gard in your mind give you a 50 degree Fahrenheit drop? A. It might do it.

Q. Thank you very much. That is all I have, Your Honor.

Redirect Examination

By Mr. Kaul:

Q. Now, Mr. Levring, do you recall yesterday on direct examination the court asking you if you had any foreign patents? A. That is correct, yes.

Q. And did you name the countries in which you had these patents?

The Court: My recollection is that he named them.

Mr. Kaul: I have the numbers now and I would like to read the numbers into the record, Your Honor.

The Witness: I missed some of the patents that I have abroad, and I mentioned those in Europe that—

The Court: You mentioned, as I understand it, Great Britain, France, Spain, Switzerland, and then I asked you

about Austria, and I thought you said there was an infringement situation there and you had no patent in Austria.

108 The Witness: I have a patent in Austria but I have no plants working there.

The Court: I see.

By Mr. Kaul:

Q. Did we yesterday afternoon go through your records to get the numbers of these various patents? A. Yes.

Mr. Kaul: At this time with the court's permission, may I read those into the record?

The Court: Yes.

Mr. Kaul: British—

The Court: May I ask you this question: Is this predicated upon the same application in substance?

Mr. Kaul: Yes, the same invention, Your Honor.

The Court: All right.

Mr. Kaul: British Patent No. 851,540.

The Court: The year?

Mr. Kaul: I don't have that, Your Honor.

By Mr. Kaul:

Q. Do you have your briefcase here, Mr. Levring? A. I have.

Q. Would you get that?

109 (The witness left the stand)

Mr. Kaul: This is British patent and it is dated October 19, 1960.

Austria Patent, Numbered 205,629, and it is dated October 10, 1959.

This is the Spanish Patent and it is dated—Numbered 267,129, and it has two dates on it. The earlier one is May 4, 1961, and there is also a June 12, 1961, and this is the Swiss Patent and it is Numbered 360,320 and it is dated February 15, 1962.

This is the Japanese Patent and it is Numbered 315,986, and it is dated—I am afraid we will have to pass the date on that one as it is written in Japanese.

The Court: Maybe Mr. Parker can help you.

Mr. Parker: Not this time, Your Honor.

Mr. Kaul: This is the Norwegian Patent and it is Numbered 91530, and it is dated April 21, 1961.

This is the Canadian Patent and is Numbered 654,537, and dated December 25, 1962.

This is the Belgium Patent and it is Numbered 564,977 and it is dated March 15, 1961.

This is the French Patent, and Numbered 1,191,825, 110 and it is dated October 22, 1959.

In addition to that, there is a Danish Patent which is the patent application with serial number 148/58 which was allowed by the Danish Patent Office on July 3, 1961, and is currently involved in a proceeding, opposition proceeding, in Denmark.

The Court: What is that again?

Mr. Kaul: It was allowed by the Danish Patent Office but it is involved in an opposition proceeding and similarly, the German application, Serial No. 26942 was allowed by the German Patent Office on November 5, 1964, and with that one there is an opposition proceeding pending.

The Court: Was there an effort made to present this matter evidentiary to the Patent Office?

Mr. Kaul: No, there wasn't, Your Honor, and actually we didn't intend to present it to the court. Generally, it was my impression that the courts do not put a lot of weight on what foreign patent offices do. I know the Patent Office of the United States does not put a great deal of weight of what the foreign patent offices did.

The Court: Did they put any weight at all on it?

Mr. Parker: Not unless the same references could 111 be used, and I cannot see how it would be pertinent to the issue.

The Court: I was just curious is all.

Mr. Parker: We look at the prior art. If it is a good reference, we use it.

The Court: When you say you look at the prior art, you look at the prior art world-wise, do you not?

Mr. Parker: Yes, but insofar as persuading us one way or the other by the allowance of this application and in other countries, it would not have any influence on our decision whatsoever.

The Court: Then let me ask you this question: Why are you curious about it? Why do you look at it?

Mr. Parker: I am saying that the fact they issued him a patent, would not influence whether or not we issue a patent.

The Court: I can understand that. Would it be helpful from the standpoint of the conditions in the art?

Mr. Parker: Certainly we look at them for conditions in the art if it is available to us but we don't make a special effort.

The Court: Do you regard this as a crowded art?

Mr. Parker: No, I do not but I am not the expert in the art.

112 The Court: I understand that.

Mr. Kaul: Are you asking me the question?

The Court: Yes.

Mr. Kaul: I can't answer that question.

Mr. Parker: If I might comment on it, the space between the patent before Your Honor, would indicate to me that it is not a crowded art.

The Court: You mean the space in years?

Mr. Parker: That is correct.

Mr. Kaul: If I might also comment on that, Your Honor, I—

The Court: You had no comment a moment ago.

Mr. Kaul: I would comment on his last comment. There could be five-thousand patents in there and the Examiner happened to pick three that was spaced far apart or there could only be 25 patents and he would have to pick three and I don't think the space between the—

The Court: You mean he took those that he thought were relevant?

Mr. Kaul: Yes, that is his job and what they do, they don't particularly try and get the latest ones.

The Court: All right. Thank you.

113 Mr. Kaul: To complete this list, there is one other one, an application to Holland and that is Serial No. 225,074, which was just allowed on December 5, 1965. So far there has been no report of any opposition proceeding but it was published for opposition.

The Court: All right.

By Mr. Kaul:

Q. Now, I don't want to cross-examine you in too great of detail but—

The Court: You don't want to cross-examine him at all.

Mr. Kaul: Excuse me.

By Mr. Kaul:

Q. In redirect into too great of detail on these patents since we have other witnesses who will testify to them, but I would like to clear up a couple of points which were brought out.

Looking to your claim which is Claim 9, do you find any mention in there of the word superficial or superficially?

A. Yes.

Q. What does that word mean to you?

The Court: Wait a minute. Claim 9 before me, a
114 method of coating the surface of a wooden article with lacquer finish.

You are asking what the word superficial means to him.

Mr. Kaul: As one skilled in the art.

The Court: Yes. Well, the word superficial, if you break it down, comes from latin, siuperfishel, and it means on the surface.

By Mr. Kaul:

Q. Would you agree with His Honor's interpretation of that?

The Court: No, I don't want him to agree with my interpretation.

I am saying it means one thing to me and to this gentleman, in his professional capacity, it may mean something else as used here, and that is what I want, the meaning as used here.

By Mr. Kaul:

Q. Would you give us your interpretation of the word superficial? A. It has been very difficult for me to state scientifically what the surface as such is and therefore, I have given these temperatures and times and drop temperature by application of paint just to explain what
115 I mean by superficial because temperatures vary, as pointed out, within the limits mentioned here and I have heated what I feel superficially.

Q. Is it your definition of the word superficially as used in the claim, that if you heat to the temperature and for the times specified in that claim, that would produce what could be regarded as superficial heating? A. Yes.

The Court: According to his view? I see.

By Mr. Kaul:

Q. Now, in the tests which we discussed at some detail yesterday, which you conducted, Mr. Levring, will you again relate to us the nature, general nature, of these tests? Were they intended to show a general comparison between? A. The comparison between the superficial heating prior to application of paint and method described as deeply heating prior to application of the paint or the lacquer.

Q. All right. Now, let's consider the Aylsworth patent here. You have that before you and I am not sure which one that is. Let me identify it for the record. Defendant's No. 1-A.

Mr. Parker had you read from column 2 which is where
116 the wood was dried for several hours at a temperature of 220 or 250 degrees.

Would this create a superficial heating? A. No, it would not.

Q. Would it create a deep heating? A. It will create a deep heating.

Q. Let me ask you one other thing. Referring back to column one here, you quoted a passage lines 40 through 47 and in that passage on line 44, they use the words thoroughly dry. A. Yes.

Q. Do you see those words? A. Yes.

Q. What do those words mean to you as one skilled in the art? A. It has been thoroughly heated.

Q. What are you drying? A. Taking moisture out of the timber.

Q. Do you want to take moisture out of the timber with your process? A. No, I do not.

Q. All right. A. Quite to the contrary.

117 Q. Do you think that the teaching of this patent is in any way similar to the steps of your process? A. No, I think it is misleading me. If I follow the advised the—

Q. Could you summarize for us in your own words the difference between the Aylsworth process as you understand it, and your process as set forth in the claims in this case?

I am not speaking about the Aylsworth claims but I am speaking about your invention as defined. A. Yes.

Q. Do you understand the question, Mr. Levring? A. Would you be kind enough to repeat it?

Q. What I am asking you to do, Mr. Levring, is summarize for the court, if you would, the differences between the overall process as set forth in the Aylsworth patent and the overall process which is involved in this proceeding as set forth, for example, in Claim 9. Give us a summary in your own words. You do not have to quote it. A. The Aylsworth patent relates to application of certain lacquers where it is desired to dry out a piece of wood, and it must be for a certain purpose.

My patent applies to carry through a process of
118 finishing in the shortest possible way with the best
results of finish without damaging or altering the
conditions of the timber on which I apply my finish.

The Court: All right, we will stop here to give the reporter a little break.

Mr. Kaul: I have just about five minutes more, Your Honor, and that will complete my redirect.

The Court: I just want you to know that we usually stop at 11:15 to give the reporter a break. She has been busy here all the time.

You may go ahead.

By Mr. Kaul:

Q. Now, let's move on to the Taylor patent, Mr. Levring. Is that No. B there? A. That is E.

The Court: That is 1,435,031.

The Witness: Yes, Your Honor.

By Mr. Kaul:

Q. And when you testified on that, you testified that the patent sets forth the use of melted paraffin.

Is this a material that is used in the surface finishing industry? A. Not as far as I know. I have never
119 heard of it used in the finishing industry.

Q. Is the surface finishing industry the industry or the art to which your invention pertains? A. It is.

Q. Now, let me ask you one other point here about the Taylor patent.

What is the article or piece being coated in this patent?

The Court: It says log.

The Witness: Yes.

By Mr. Kaul:

Q. In the surface finishing industry, do you finish items, any items, such as logs or the like? A. No.

Q. What is the surface finish applied to since that is what the invention relates to. A. The finish takes place

on well prepared machined and sanded pieces of wood or wooden articles.

Q. Fine. All right. Now, let me just refer you to the Gard patent. A. Yes.

Q. Will you tell the reporter what the exhibit number is?

120 The Court: That is 2,631,109.

The Witness: That is "C".

By Mr. Kaul:

Q. You testified that Gard uses a dielectric heating, is that correct? A. That is correct.

Q. And you testified that you know how a dielectric heater works? A. I know of it, how they work.

Q. Would you state for the court in your own words how a dielectric heater does work? A. By means of a generator high frequency tension is produced, and if I want, by means of dielectricity, to heat up a piece of material, I place two electrodes on each side of the item.

Q. Are they in contact with the item? A. Yes, they are.

Q. In other words, if I hold up this pad of paper here in my hand, and my hand with the electrode, would you place them on opposite sides like that? (Indicating) A. That is the way.

Q. Does the heating transfer between the electrodes? A. It does. It is created in the interior of the material placed between the two electrodes.

Q. Is it possible to obtain a superficial heating using dielectric heating? A. Not to my knowledge.

Q. Now, let me ask you one more point here. Referring over here to column five, this patent, where we talk of a 50 degree temperature differential.

What do you understand the word differential to mean? A. That is the difference in temperature between the item I submerge in the paint and the temperature of the paint in which I submerged it.

Q. So let me give you an example. If your item was 150 degrees, would your paint then be—the paint or lacquer, liquid material, would that be, for example, 100 degrees? A. Yes.

Q. Now, let's assume that you submerged that piece of wood into this material with a 50 degree temperature differential. Would you necessarily get a 50 degree drop in temperature by submerging it in that manner, an instantaneous drop? A. Of the article, no, I would not.

Q. You would not?

122 Q. Would you just check your claims there again, Claim 9, and would you read for the court the last two lines? A. "So that upon the application of the lacquer to the surface of the article the temperature of the surface of the article will immediately drop by at least 50 degrees Fahrenheit."

Q. All right.

Mr. Kaul: Thank you, Mr. Levring, I have no further redirect.

The Court: I would like to ask one question, if I may.

Referring to the Taylor patent, the Taylor patent, 1,435,031, on the second column, paragraph 2 from the standpoint of the claims, line 86, "A process of preventing the water-logging of non-resinous woods, consisting of first weather drying the log until it has a specific gravity less than water."

What is meant by that?

The Witness: Well, may I reply to that?

The Court: Yes, I would like to know.

The Witness: When the tree is chopped, it has a content of water. If I put it in the water, in many cases it will go down to the bottom because it has a specific
123 weight higher than water.

If I leave the log for a time, put it in the air, a certain amount of moisture will pass out because there is no further support from the earth because it has been chopped and will dry out in the air and thereby lose weight.

The Court: I see. Now, moisture is a form of water, isn't it?

The Witness: That is a form of water, yes.

The Court: You are not concerned with the specific gravity of the piece you work on in relation to moisture, are you?

The Witness: No, not necessarily.

The Court: All right. Thank you.

Mr. Parker: I just have two quick questions.

The Court: All right.

Recross Examination

By Mr. Parker:

Q. I am looking again now at the Taylor patent, and this is Exhibit E. A. Yes.

Q. Now, Taylor, line 76, does rapidly heat a surface, does he not? A. Yes.

Q. All right. Now, looking now at the Gard patent, and this is Exhibit C. A. Yes.

Q. I am looking at column 7. A. Yes.

Q. I am looking at line 17 through 20. A. Yes.

Q. Gard tells us that he can localize the heat, does he not? A. He says so.

Q. And then that he can impregnate only the desirable surface, does he not? A. Yes, but may I—

Q. Yes. A. As a skilled man, may I give a reply to that?

The Court: You may qualify your answer.

The Witness: All right. As interested in this patent, I have tried to investigate what was the idea of it, and I could here utilize to a certain degree this very good patent.

In producing window frames, for instance, it is
125 essential where the joints of the frames are, where they are jointed, to have an impregnation of the ends of these bars to avoid moisture to penetrate from the ends into, and I will admit that it is possible when I have

such a bar to take the ends of it between a couple of electrodes and heat that partially. That means that the rest of it is not heated, but that part of it, of a magnitude of up to two inches length of a 3 to 5 feet long bar.

By Mr. Parker:

Q. My last question: Gard talks in terms of reducing the temperature at least 50 degrees, does he not? A. Gard?

Q. That is correct. A. Yes.

Q. I am looking now at column 7 and in line 41 in the claim of Gard. A. Yes.

Q. Line 41? A. Yes.

Q. He talks in terms of at least 50 degrees, does he not, and the emphasis is on at least. A. Yes.

126 Mr. Parker: Thank you, Your Honor. That is all I have.

The Court: All right. We will suspend now until 20 minutes to 12.

(Whereupon, a short recess was taken.)

Mr. Kaul: Your Honor, we would like to call Mr. Sidney Taylor as an expert witness.

Mr. Taylor is associated with a very large company in Great Britain who has purchased the rights to Mr. Levring's invention for the United Kingdom.

He will testify as to the tests which he conducted before purchasing the invention, as to how the invention is now being utilized, and sub-licensed and as to his interpretation of the prior art.

The Court: All right. Thank you.

Sidney Taylor

was called as a witness by and on behalf of the plaintiff and, having been duly sworn, was examined and testified as follows:

Direct Examination

By Mr. Kaul:

Q. Would you state your name for the record, please.

A. Sidney Taylor.

127 Q. All right, and your age? A. 50 years old.

Mr. Parker: Would you speak up, please?

The Court: Sit a little closer to the microphone, Mr. Taylor.

By Mr. Kaul:

Q. And where is your residence? A. Saint Albans in London, England.

Q. Now, what is your educational background, Mr. Taylor? A. I was educated at a college of Technology in constructional engineering. I later—in the company that I was finally employed with, I specialized in production engineering.

Q. You have an engineering degree? A. I have an intermediate degree.

Q. In what branch of engineering? A. Constructional engineering.

Q. Constructional? A. Yes.

The Court: I think we equate that with structural engineering here.

The Witness: You would, sir, yes, sir.

128 By Mr. Kaul:

Q. What is your occupation? A. I am employed by my present company as a divisional manager for Porter Paints which are a subsidiary of Reckitt and Colman.

Q. Do you—

The Court: That is a British firm?

The Witness: It is.

By Mr. Kaul:

Q. Do you or the Reckitt and Colman Company have any financial interests in this suit, the outcome of it?

A. None whatsoever. We have no interest in developing the particular techniques with the finishing over here.

Q. In other words, it would not make any difference to you or your company whether or not Mr. Levring gets his United States patent? A. No, sir.

Q. What is the size of the Reckitt and Colman Company?

A. It is—

Q. What is the business of the Reckitt and Colman Company? A. Principally they are makers of drugs and
129 chemicals for domestic use, and many other allied products as well, and amongst them decorative paints for household use and finally, with my own company, industrial coatings.

Q. When you say your own company, are you now referring to Porter Paints? A. Yes, and the subsidiary to which I belong.

Q. Of Reckitt and Colman? A. Yes.

Q. Is Reckitt and Colman a large company? A. In the United Kingdom, a very large company.

Q. Does it do any business outside of Great Britain?

A. On the drug and chemical side, a considerable amount, and in the paint and surface coatings, a limited amount.

Q. We have over in this country what we call a blue chip company. Are you familiar with that term? A. I am.

Q. Would you characterize Reckitt and Colman as a blue chip company? A. Yes. In the United Kingdom this would be a giltedge security, and there are possibly about 25 to 30 companies in the United Kingdom who are ranked as such companies, and Reckitt and Colman would be one
of these.

130 Q. How long have you been with Reckitt and Colman? A. Ten years.

Q. Did you have any experience in the surface finishing industry before that time? A. Yes, over a period of perhaps 20 years prior to my work with Reckitt and Colman.

Q. So you have approximately a total of 30 years experience in the surface finishing industry? A. That's right.

Q. Based upon your educational background and your experience in the surface finishing industry, do you consider yourself to be generally knowledgeable in the practices and procedures of—

The Court: I would conclude that he is.

Would you conclude that?

Mr. Parker: No objection.

By Mr. Kaul:

Q. What is the nature of your duties with Porta Paints?

A. Primarily a manager of a special process division, and amongst them I have—I am responsible for the commercial exploitation of the Levring paint to which we paid a lot of money.

Q. We will get into that in a moment

131 Do you have any people working under you? A.

We have a department of which six specialize on the Levring process.

Q. I take it then that you are familiar with the Levring process involved in this action? A. I am.

Q. When did you first hear of it? A. In 1961.

Q. Prior to that time, had you ever heard of any pre-heating type of operation being used in the surface finishing industry, for surface finishing of wood? A. It was unknown in the United Kingdom.

Q. Did you—

The Court: How would they apply lacquer ordinarily in the United Kingdom before 1961?

The Witness: This would be normally applied by spray application or there are many ways of applying it—lacquers, of course. Spray application is only one and there is a system called curtain coating, roller coating and dipping and—

The Court: Would there be any treatment of the material that was to be lacquered?

The Witness: Not prior to coating.

132 The Court: You just apply the coating directly?

The Witness: The coating would be applied and then a form of treatment to assist the curing.

The Court: That would be by heat?

The Witness: That would be by heat, and we would term it post-heating.

By Mr. Kaul:

Q. Was this post-heating being done and used in the industry at that time? A. That was the normal way to do all types of heat curing.

Q. When your company first heard of the Levring process in 1961, did it have any interest in this process? A. Yes.

Q. For any particular reason? A. Yes, because we were at the time and still are the largest makers of a particular type of coating, Polyester Paints, and amongst one of our many customers was one that had a particular interest in this type of coating, and they are kitchen cabinet manufacturers. They are one of our larger accounts and worth to us annually about 120-thousand pounds, and I only mention this amount to give the scale of the operation
133 with this company.

They are required to put their finishing line on an automation system, and this is what brought me into the Levring system because my combination as an engineer, production planning, and surface coating, chemical formulation, I was considered to be the person to design the automation system.

We worked primarily on the ideas of post-heating first, and then—

The Court: Excuse me. Are you talking about actually finishing wood?

The Witness: Yes.

The Court: It is a paint company?

The Witness: Yes, that is right.

The Court: Well, how does the process effect the paint that you manufacture?

The Witness: Perhaps I must explain that here we acquired the rights, process rights, to sell our paints.

The Court: I understand that but the process doesn't change the character of your paint, does it?

The Witness: No, sir, but we offer a comprehensive system of process and paint because the paint and the process are designed to suit one and the other.

134 The Court: I understand. You are selling them a process or process, as you presumably say, because, after all, you are more familiar with the language than we are, and so you sell the combination and with this combination of the application of your paint, Porta Paints, you have this result?

The Witness: We have, sir.

By Mr. Kaul:

Q. When your company started discussing or negotiating with Mr. Levring back in 1961, did it immediately undertake the purchase of any rights to Mr. Levring's invention? A. No, we obtained an option on the process for 12 months which gave us the opportunity to carry out detailed tests and the examination on the possibility of circumventing the patent.

Q. When you say tests, were these laboratory experiments? A. Yes.

Q. Did you personally participate in any of these experiments? A. Yes, I was part of the team that investigated it.

Q. Were there others on that team, as well? A. Yes.

135 Q. Are you familiar with the people? A. I am.

Q. Do you regard them as being generally knowledgeable in the industry practices? A. Yes, we put our best men on the job.

Q. So you would say they are technicians having ordinary skill in the art? A. Yes.

Q. What type of tests did you conduct at this time?

A. First of all, we looked at it from the different types of finishes we were interested in, and first, as I mentioned before, the polyester finish. Our previous experience with polyester finishes were that one, by ordinary cold curing it took eight hours, and possibly over night after application to dry.

We were investigating post-heating of a means of accelerating this cure.

We were able to get down the time to one and half hours after post-heating, and our initial tests with the Levring system, we found that by the application of pre-heat, combined with a degree of post-heat, we were able to reduce this time to four minutes and to us this was a considerable break through.

Q. Did you, during your tests or experiments in 136 any way attempt to circumvent the limits of the Levring process? A. Yes. We looked at this figure of 50 degrees reduction of temperature, and we wondered whether by operating below this temperature, we could achieve the results that we obtained with the full benefit of the Levring system.

The Court: Why were you curious about that?

The Witness: We assumed, and while I am not a patent expert, we assumed that if we were operating at a temperature that didn't have this 50 degrees reduction, that is, 45 degrees, we would—we could operate out—

The Court: You mean outside the claim?

The Witness: Yes.

The Court: So when you use the word circumvent, you mean it literally?

The Witness: Yes.

By Mr. Kaul:

Q. Would it be fair to say that your tests were conducted in an effort to see if your company could avoid infringement of the patent?

The Court: That is the conclusion that I drew.

The Witness: Yes.

By Mr. Kaul:

137 Q. How long did your tests take? A. Oh, well, a very intensive period of one month to begin with, and then it was spasmodic over the remainder of the 12 months.

Q. Does your company have a patent department? A. They have.

Q. Is it a large department? A. I think it is considered to be very large because of the nature of the products.

Q. About how many people? A. They have something in the neighborhood of 22 lawyers.

Q. 22 attorneys? A. Yes.

Q. Did they conduct any investigations simultaneously with your laboratory tests? A. Insofar as the prior art with the patents, yes.

Q. As a result of these investigations, did they come to you as a laboratory technician and suggest to you any prior patent which might be satisfactory for your purpose? A. Some mention was made about patents but it is so many years ago that I am not familiar with these patents.

Q. I am not asking you for the number or the
138 name. A. Investigation proved they were of no use to us.

Q. Well, what was the outcome of all your laboratory investigations and the outcome of the patent department's investigation and so on? What was the end result after this year? A. We purchased.

Q. Did you take the option? A. Yes, we purchased the option.

Q. How much did you pay for it? A. 140,000 pounds, approximately. Perhaps \$300,000.

Q. Do you think it would be closer to \$400,000? A. Yes.

The Court: A pound is 2.85 today, isn't it?

The Witness: I think it is 2.70.

The Court: All right.

By Mr. Kaul:

Q. Was it a little higher at that time, five years ago?

A. Oh, yes. I couldn't be sure, sir.

Q. So we would be safe in saying that you paid somewhere in the neighborhood of \$400,000 in United States currency? A. Yes, I would say so.

Q. Evidently at that time your company must have been convinced as to the need for acquiring the
139 Levring process to pay that kind of money, wasn't it? A. Yes, indeed, and we were most enthusiastic about it.

Q. Evidently your laboratory also did not reveal any way of circumventing the patent, is that right? A. No, we couldn't find any way.

Q. Now, sir, that you have adopted and purchased the rights of the invention, have you used it commercially? A. Yes.

Q. Has it proved to be satisfactory? A. Yes, it is satisfactory.

Q. Will you tell us what you can accomplish with the Levring process which you couldn't accomplish with any process that was known prior to that time?

In other words, what are the advantageous features of the Levring process? A. Well, the prime one to us is the exceptional high productivity capacity of the process. That is not in the patent.

Q. When you say not in the patent, do you not carry out the process in accordance with the steps in the patent? A. Yes, we do, yes.

Q. Do the pre-heating in less than 120 seconds? A. Yes.

140 Q. So doesn't that in fact give you an inherent speed? A. It does. Our normal pre-heating time is between 20 and 30 seconds. This means that we can

get production capacities from processes where you process something like 5,000 square feet per hour and this comes to over a work week to about 200,000 square feet per hour. Unless you are working at these fast rates, you couldn't possibly achieve this.

Q. Are there any other advantages to the Levring process so far as your company is concerned aside from the speed?

A. Yes.

Q. What would they be? A. First of all, of course, is it solved the problem to us of obtaining a surface coating free of defects. It had been a big problem to do this without bubbles occurring in the film.

Another factor which is very important, indeed, that in all our commercial outlets, we are dealing with companies who are using materials for which the moisture balance—the maintenance of the moisture balance is vital, and that is, here we are dealing with construction of furniture and kitchen cabinets hardboard and wall board and so forth.

Q. What happens if you disturb this moisture balance?

A. Well, if we take one instance of kitchen cabinets, 141 which is made up of panels which are made of first a simple wood frame with two outside skins or two faces and there is a difference in moisture balance between the two and any disturbance, any appreciable disturbance in moisture content would create a warping or distortion of panels, since these panels are produced and coated before assembled, this was important.

Q. When you carry out this steps, the steps of the Levring process, commercially, do you maintain the moisture content substantially constant? A. Yes.

Q. Does your company grant any sub-licenses under the Levring process? A. Yes, to all the companies we put in the process.

Q. Do you have many such sub-licenses? A. Yes, we have a number, yes.

Q. Do they all appear to be satisfied with the Levring process? A. Yes, they are all operating and we have not changed the system.

Q. Have you had any complaints? A. Not as to the system, no.

Q. Do you have any people that work in the field
142 with the sub-licensees? A. Yes, we have technicians who visit the various companies.

Q. How many? A. It varies accordingly and the six I mentioned and there are two or three permanently visiting around the country keeping a constant check on the efficiency of the process, and two or three others that are available from the laboratory to carry out further work of this kind.

Q. In other words, the invention is being practiced in Great Britain on such a scale it could keep between three and six people busy full time just checking on this to make sure it is all right? A. Yes, that and a few other duties.

Q. Now, at the time that your company was negotiating with Mr. Levring and this is back in 1961, were there any other companies that you know of that were likewise interested in his process? A. Oh, yes. The ICI organization, and the Courtaulie.

Q. What was the other one? A. Courtaulie.

143 Q. Are these large companies? A. Yes, indeed.

They are possibly larger than Reckitt and Colman in some respects.

Q. After you acquired the Levring process, have you experienced any companies attempting to infringe on your rights? A. Yes, in one instance we—

The Court: How material is this?

Mr. Kaul: I think it will be material, Your Honor.

The Court: Make the proffer now then.

Mr. Kaul: Well, it is material in that the witness will testify as to the fact that the so-called—

The Court: You mean the mere fact that they attempted to infringe would indicate a curiosity?

Mr. Kaul: No, Your Honor, the witness will testify that the attempted infringer was not successful, although he attempted to infringe, he could not in fact infringe because he went outside—he was working outside of the 50 degree temperature.

The Court: I know, but he was trying to infringe upon the process, the Levring process.

Mr. Kaul: No, Your Honor, because he did not know enough about the Levring process. He had a general idea as the witness will testify.

144 The Court: If he didn't know anything about the Levring process, how could he attempt to infringe?

Mr. Kaul: He knew about the Levring process, and it was one of the companies that had negotiated with Mr. Levring initially, and they had a general idea, and they attempted to carry it out, but they did not use the 50 degree temperature drop. They were using something less than that.

The Court: I will accept that as evidence.

Do you have any objection?

Mr. Parker: No.

The Court: That will be the evidence if he had been permitted to answer.

By Mr. Kaul:

Q. Do you feel that the Levring process was worth the money that you paid for it? A. It is considered so by my company.

Q. Do you think it has proved to be a valuable, and important asset within the industry? A. Oh, exceptionally so. The prefinishing of materials, particularly in buildings, is gathering momentum in the United Kingdom, and until the use of this system, there was no real satisfactory way of doing this at a rate of production that

145 was necessary.

Q. Now, I assume that you are aware of the fact that this suit involves the right of the plaintiff, Mr. Levring, to obtain a patent on his invention in the United States, and under our laws, which is Title 35 of our Code, Section 103, an inventor within the United States is not entitled to get a patent on his invention if the invention would have been obvious to one having ordinary skill in the art at the time the invention was made.

The Patent Office has taken the position that the invention is obvious in the sense of 103, and has cited certain prior patents to support their position.

Now, I would like to consider these patents with you in some detail, and have your expert testimony on them.

Mr. Kaul: Where is Defendant's exhibit 1?

Mr. Parker: You may use my copy.

The Court: You may give him that, and you use this if you want to.

Mr. Kaul: I have my own, Your Honor.

By Mr. Kaul:

Q. Defendant's exhibit 1, and it is Item A which is the Aylsworth patent, and are you familiar with the subject matter of this patent which both the Examiner and the Patent Office—

146 The Court: I would assume that he has read the patent.

Mr. Kaul: Yes.

The Witness: Yes.

By Mr. Kaul:

Q. Does it in fact relate to a process for coating the surface of a wooden article? A. It does.

Q. In this respect, would you consider it to be directed to the same art as Mr. Levring's invention? A. No, it is approached totally differently.

Q. Well, at least in the same art, the art of surface finishing? A. I would say so but not in the terms of the sophisticated types of work we do. It is of crude nature or possibly could be put in that category.

Q. Let me ask you this: Does the patent suggest the idea of the preheating of a wooden article? A. It does, yes.

Q. Now, let's consider the specific nature of this preheating, and I ask you to look in column one, from lines 40 to 47.

You were in court before when Mr. Levring read
147 this out loud. You might read this to yourself and see if you understand that. A. Yes.

Q. Have you read that? A. Yes.

Q. What are the words "thoroughly dry" in line 44 mean to you? A. Well, it would appear here that it is really reducing the moisture content down to zero. I gather this by the temperatures that have been used.

The Court: Heating the piece all the way through?

The Witness: Yes. Possibly I am jumping the gun here, sir, but I notice the temperatures that are shown here in terms of several hours up to 120 degrees Fahrenheit, and if you were to do this for two and half hours, you would reduce the moisture content down to zero.

By Mr. Kaul:

Q. In light of these passages in the patent, and in light of your skill in the art, is there any question whatsoever in your mind thatt he practice of the Aylsworth process would reduce the moisture content substantially? A. Yes, sir, it would.

148 Q. You would think it would? A. Completely.

Q. Does the Levring process want to materially alter the moisture content of the wood? A. Not at all. We would not have been interested in it if it had.

Q. Is it this lack of altering the moisture content, in fact, a very important feature of the Levring process? A. It is, as I explained about the kitchen cabinets.

Q. In light of the testimony that you have given, do you believe that the results obtained by the practice of the Aylsworth process would be substantially the same as

the results obtained by the Levring process? A. There is no connection.

Q. You think that would be a difference then? A. Completely different, yes.

Q. Now, let's consider some of the procedural steps carried out by Aylsworth after it is preheated.

If you will look over in column 2 of the patent, would you read from lines 76 where it starts with the word secondly down through 84? A. You mean read it out loud?

149 Q. Yes, please. A. "Secondly, the wood, while hot, is dipped in the enamel composition. The coated object is then removed at once from the enamel composition, and is baked in an ordinary oven at any temperature lower than that at which the wood was dried."

Q. Now, the next sentence, please. A. Yes, sir. "The time of baking will depend upon the temperature used or the nature of the enamel and may vary from one to six hours."

Q. In other words, does Aylsworth teach that you have to have a baking after the coating is applied, a one to six hours baking? A. It does.

Q. How does this fit in with the practice as used in the Levring process? A. Well, it doesn't connect at all.

Q. In fact, if you were to carry out the Aylsworth process, wouldn't it take you a great many hours to carry out the process as taught by Aylsworth? A. It would, yes.

Q. Would you not first have to heat for several hours, and then apply the coating and bake for several more hours? A. That is true.

150 Q. How does this contrast with the Levring process? How many minutes did you say it took for the entire Levring process? A. Your preheat time would be 20 to 30 seconds, and in some cases, no further post-heating is required. In the more sophisticated finishes, you possibly might be about two to four minutes.

Q. In other words, would you say the maximum for commercially carrying out the Levring process would be four minutes? A. It would, yes.

Q. All right. Let me ask you this: Even if we were to consider this Aylsworth process, consider it in its most favorable light, and assume that it could produce a coating which is every bit as good in character, appearance and quality, as the coating produced by Mr. Levring's process, would your company still be interested in the Aylsworth process? A. I can't conceive of any commercial outlet for it.

Q. In other words, if someone had showed you the Aylsworth patent and showed your company the patent at the time you were doing your investigation, and said, look here, here is an expired patent which you can use, and you won't have to pay a cent of royalty, and you can
151 use the teachings for free, would your company have been interested? A. Not at all, no.

Q. Now, I think it is fair to state, is it not, that Aylsworth teaches a very long preheating time for drying out the wood? A. That is so.

Q. And one skilled in the art of wood finishing, if someone had showed this patent to you, and you read it and noticed the length of time—

The Court: I think you are becoming a little repetitive. He said he wouldn't be interested in it at all.

Mr. Kaul: I wanted to ask him whether it would be obvious to him as one skilled in the art, that these times of heating could have been reduced from several hours to several minutes or several seconds.

The Court: You may answer that.

The Witness: The teachings of this patent is completely misleading for the types of finishes and problems that we are trying to solve.

The Court: Thank you. That is not quite responsive.

Mr. Kaul: I want to know—let me explain it to you

this way: The Patent Office has suggested that it
152 would be obvious to one skilled in the art that the—

The Court: It would be obvious to a person with your training and experience.

By Mr. Kaul:

Q. That the Aylsworth heating time could some how be reduced from several hours to several seconds.

Now, I am asking you if this would have been obvious to you? A. No, because he specifically wants to remove all the moisture and it wouldn't—I don't think we would have looked at it.

The Court: Where do you find that?

The Witness: The very fact of the temperature range as used for the period of time means that you are reducing the moisture content as I said previously.

By Mr. Kaul:

Q. Do you think the words "thoroughly dry" as used by Aylsworth could mean that he wants to reduce the moisture content? A. Yes, I would say so.

Q. And would you believe that if you only heated for several seconds or several minutes that you would
153 not get this thorough drying? A. You would hardly effect the moisture content of the body of the material. In fact, you would—it wouldn't, in fact, effect it at all. You would just simply remove the surface humidity.

Q. Fine. All right. Now, let's move on to the Gard patent which you have before you.

The Court: That is "C", 2,631,109?

Mr. Kaul: Yes, defendant's exhibit No. 1.

By Mr. Kaul:

Q. Are you familiar with the subject matter of this patent? A. I am.

Q. Would you read aloud the first paragraph of the patent, first paragraph in column one? A. I am afraid they are stuck together.

"This invention relates to a method of impregnating wood and is concerned more particularly with a method of impregnating wood with an impregnant subsequent to removal of water from the wood until its water content is essentially zero."

Q. Are the teachings of this passage that you just read similar in any way to the concept of the Levring process?

A. No, they are the opposite.

154 Q. Why would that be? A. Because the teachings of the Levring process are in fact to maintain the moisture balance.

Q. In view of the fact that Gard wanted to get the moisture content, as he says, essentially to zero, and in view of the fact that Levring doesn't want to disturb it at all, would you say that the Gard process and the Levring process have essentially opposite objectives? A. Yes, I would.

Q. Now, I think you heard Mr. Levring read aloud from a column of the patent, column 3. Mr. Parker had him read a portion of it which had to do with dielectric heating.

The Court: You are talking about column 3?

Mr. Kaul: Yes, column 3. I think he read from lines 5 through 12.

The Court: "By heating the wood dielectrically"— Is that where it is?

Mr. Kaul: That is correct, line 4.

By Mr. Kaul:

Q. Did you hear Mr. Levring read that portion? A. Yes, I did.

Q. Now, I specifically want to direct your attention
155 to this sentence appearing at—well, substantially line 16 where he says: "Whereas with ordinary drying methods, the outer portions of the wood are heated to a higher degree than the inner portions."

Excuse me. That is the wrong part.

The next sentence. "By having the interior of the wood at least as high as the exterior and possibly somewhat higher due to heat losses from the surfaces during and subsequent to drying, an unusually effective vacuum action is obtained"—

Doesn't this clearly indicate that the interior of the wood has to be at least as hot as the exterior? A. Yes.

Q. Or even hotter? A. Yes.

Q. Is this in any way similar to the Levring process? A. No. Again, it is teaching the opposite.

Q. Does Mr. Levring use a superficial heating? A. Yes, I think you could call it a superficial heat.

Q. How would you describe superficial heating? A. Well, it is purely surface heating.

Q. Now, you heard testimony that the Gard patent uses a dielectric heater. Do you agree with that?
156 A. Yes, I agree with that. That is what he says here.

Q. Do you know how a dielectric heater works? A. No, I am not an expert on the subject but I understand that two electrodes make a contact on both sides of the surface and connected to a source of high frequency power and when the power is applied, heat is generated throughout the cross-section of the material.

Q. Let me refer your attention to the paragraph, line 64, column 3, where Gard himself talks about the dielectric heating, and he starts off and says: "The blank is placed between electrodes connected to a source of high frequency power such as a conventional electronic"—

Is that in accordance with your understanding of dielectric heating? A. Yes it is.

Q. And we can skip a few lines here and then it goes down to about line 73 and he starts and says: "Heat is generated substantially uniformly throughout the extent of the blank by subjecting the blank to the high frequency field."

The Court: Where is that?

Mr. Kaul: That is line 73, column 3, Your Honor.

The Court: All right, I have it.

157 By Mr. Kaul:

Q. What do the words "substantially uniformly" mean to you? A. It means what it says, that the heat is right through the material, and that it's substantially uniform throughout the cross-section of the material.

Q. And how would you contrast this with superficial heating? A. Well, the direct opposite. One is surface and one is through the cross-section.

Q. As an expert in the art, I am going to ask you if in fact it is possible to get a superficial heating by using a dielectric heater? A. Not at all possible.

Q. It could not be done? A. No way whatsoever.

Q. All right. In view of that, I would like to direct your attention over to column 7 of the patent and lines 17 through 24.

In that paragraph it discussed the idea of localized heating and the Patent Office Examiner and the Board of Appeals have taken the position that the so-called
158 localized heating set forth in here is the equivalent of the superficial heating called for in the Levring process.

Do you agree with that? A. No, I don't agree with that.

Q. Why would that be? A. Localized heating is not superficial heating. I think what is meant here, if it would be logs or blanks of timber, the end section—a section of a log is inserted—not a log but if it is a blank, it is inserted between two electrodes and immediately you will get heating right through that particular section.

The remainder of the length of the blank would not be effected and this does localized the heat to that particular section.

This is not superficial heating. Superficial heating is surface heating.

Q. I see. Now also noting and this is the last paragraph of the detailed specifications which is rather lengthy and I think you testified previously as to the various portions of the specification.

Do you believe that the patentee himself could have in any way intended that this localized heating that
159 he speaks about here could be only a surface heating as opposed to heating completely through the wood?

A. Oh, no, because here he, after all, wishes to impregnate a particular end section and he would only achieve what he wants by removing the moisture content throughout the particular section.

Q. Well, in other words, would you consider that the holding of the Patent Office Board of Appeals when they stated that this localized heating was the "equivalent" of superficial heating, would you consider that to be inaccurate? A. Completely inaccurate, yes.

Q. In fact erroneous? A. Yes, I would say so.

The Court: He said inaccurate. How far does he have to go?

Mr. Kaul: Erroneous.

The Court: That is inaccurate.

Mr. Kaul: All right, Your Honor.

By Mr. Kaul:

Q. Now, suppose someone had offered the Gard patent to your company and suggested that its process might have been valuable in the wood finishing operations.

160 Would you have been interested? A. Not at all. Not at all.

I am sorry, but it amuses me.

The Court: What is that?

The Witness: I am sorry if I appear to be amused.

The Court: I think that is an appropriate reaction at this moment. We are going to quit at 12:30 but not for a very amusing purpose but for a very important one.

Mr. Kaul: I have just two questions left.

By Mr. Kaul:

Q. If at the time Mr. Levring had come up with his invention some ten years ago or any other time since then someone had shown you the Aylsworth patent which we discussed previously and the Gard patent which we have just discussed, and had suggested to you that there was some way of logically combining the teachings of these two patents, could you have seen any such way of combining them? A. No, the reverse. They would have misled me. I would have done far better—I could conceive of possibly achieving Mr. Levring's ideas from my own experience and knowledge in the industry like any other inventor but if I had to refer to these teachings, they would have led me away from it.

161 Q. So it would not have been obvious to you by combining the Aylsworth patent and the Gard patent that you could approach Mr. Levring's invention? A. If I wanted to carry out impregnation by wax and things of this kind, certainly, but not for our type of work. Not at all.

Mr. Kaul: I want to move on to the Taylor patent. Do you think we ought to break for lunch before we start that?

The Court: You can start on it if you want but I don't assume we will finish it.

Mr. Kaul: No.

The Court: I don't think you should start it then.

Very well. We will reconvene at 1:45 and I will have everyone out of here today.

As I understand it, you have one other witness?

Mr. Kaul: I have to finish with Mr. Taylor, Your Honor, and Mr. Jensen, and he will be the last witness.

The Court: All right. We will finish today. I do not care but I am assuming that these gentlemen have to leave town.

(Whereupon, at 12:25 p.m. court recessed to reconvene at 1:45 p.m. the same day.)

1:45

The Court: I think we have finished with the direct examination of Mr. Taylor, is that right?

Mr. Kaul: No, Your Honor. We had finished with two of the patents.

The Court: I see. Excuse me.

Mr. Kaul: I have one more to go through yet.

Sidney Taylor

resumed the stand, previously sworn, testified further as follows:

Direct Examination (Cont'd)

By Mr. Kaul:

Q. I would like to direct your attention to the Taylor patent.

The Court: That is 1,435,031?

Mr. Kaul: Yes.

By Mr. Kaul:

Q. Are you familiar with the subject matter of this patent, Mr. Taylor? A. Yes, I read it.

Q. All right. Would you read aloud the sentence
163 extending from lines 10 through 16 in column 1 of the patent? A. "My invention relates to improvements in processes for preventing the water-logging of non-resinous woods and the object of the invention is to devise means for preventing logs of non-resinous wood when floating upon the surface of the water down stream from becoming water-logged."

Q. Does this have anything to do with the surface finishing of woods, such as the Levring process is concerned with? A. Not in my experience with the different commercial outlets in which I am involved.

Q. Do you recall what material Taylor suggests using for water-proofing his logs? A. I believe it is paraffin wax.

Q. Is it in fact a melted paraffin? A. Yes.

Q. Would you look to each of the three claims appearing at the end of column 2, Nos. 1, 2 and 3, and see if each of these claims does in fact specify the use of melted paraffin?

A. In each case they do.

Q. Is melted paraffin a material that is used in
164 the surface finishing of wood? A. No, not surface
finishing as such. Probably a presevative and so
forth.

Q. Not in surface finishing? A. No.

Q. Is Mr. Levring's Invention directed to a process for surface finishing of wood? A. Yes.

Q. Now, if some ten years ago when Mr. Levring made his invention or even some five years ago when you and your company negotiated with Mr. Levring, you had read this patent, would you have considered it to be of any value for your wood finishing operations? A. No, I don't think we would have seen any connection.

Q. Even if you read it today, does it strike you that this might have a utility for your purpose? A. No.

Q. Then let me ask you if some ten years ago Mr. Levring had made his invention, as a person skilled in the art, if you were looking for a technique for improving your wood finishing procedures, would you have looked to the
art of the subject matter of preventing the water-
165 logging of logs for a solution to your problems? A.
It would not have occurred to me.

Q. Again, speaking as one skilled in the art, can you today or could you at any time in the past seen any logical way in which you could combine the teachings of this Taylor patent with the Aylsworth patent, the basis reference, to some how arrive at Mr. Levring's invention? A. No, I cannot.

Q. Now, let me refer you to a specific portion of the Taylor process. We have already established that melted

paraffin is the material which is used to water-proof the logs. Would you now read aloud the sentence starting with line 31, column 1 and ending at line 39? A. Yes. "The ends of the logs are then rapidly heated by a blast of hot dry air or by the application of a heated plate of iron for a few seconds of time or by any other suitable means to a temperature above the temperature of the liquid to be afterwards applied so that such liquid will readily penetrate and not become chilled by contact with the wood."

Q. Now, let me particularly emphasize this portion in lines 38 and 39 which states that the paraffin will not become chilled by contact with the wood.

Let me ask you what happens in the Levring process when the coating material is applied to the surface of the wood? A. Well, first of all, in relation to the Taylor patent—

Q. Let me ask you first as to the Levring process, in the process itself, what happens in the Levring process when you put the coating material on to the heated wood?

A. There is a quench effect of the surface temperature, that is, reduction imposed by the combination of the lower temperature of the lacquer with the high temperature of the surface of the material.

The Court: You mean a reduction in temperature?

The Witness: A reduction.

By Mr. Kaul:

Q. Don't you in fact get a temperature drop of at least 50 degrees as is called for in Claim 9? A. It is necessary, in fact, to have a reduction of 50 degrees.

Q. But Taylor indicates here in lines 38 and 39 that he does not want his paraffin to be chilled.

Does this suggest to you that Taylor would want a temperature drop of at least 50 degrees or would he in fact want just the opposite? A. I would say he wants as much temperature as possible in order to keep the paraffin in a liquid state for it to penetrate in the surface of the wood.

Q. Now, if Taylor did in fact have a 50 degree temperature drop, what would happen to the paraffin that was applied to the wood? A. Well, I suppose it is possible that it would solidify and not carry out the functions intended.

Q. And that function is? A. To penetrate the surface of the wood.

Q. All right. Now, let me ask you probably the ultimate question which is involved in this suit.

You have testified as to all of the prior patents, in detail as to all of these, and now I ask you whether it would be obvious to you at the present time or ten years ago or so when Mr. Levring made his invention or at any other time to some how combine the teachings of the Taylor-Gard and Aylsworth processes in any manner whatsoever to arrive at Mr. Levring's process? A. I can't see anything that could have come alive to help us do that.

Q. What would your testimony be if you attempted to combine these patents in the manner suggested by
168 the Patent Office? A. Well, I would produce completely reject work.

Mr. Kaul: Thank you. No further direct.

Cross-Examination

By Mr. Parker:

Q. Mr. Taylor, you have testified that at the time that you investigated the Levring patent, the British patent, with a view to possible circumventing the disclosure of that patent, that you went into your Patent Department and they called to your attention certain patents. Is that correct? A. Not to my attention particularly. This was conducted as a separate exercise for the—for the Board of the Company.

Q. Did you have an opportunity to personally— A. I didn't have a special opportunity. As a matter of fact, I think—I can't recall the patents that were introduced at the time.

Q. Do you recall whether it was the Aylsworth patent?

A. Certainly none of these patents were cited at all.

Q. So at that time you had no knowledge of these patents, is that correct? A. No knowledge at all.

Q. Now, when you investigated this again with a
169 view to circumventing the British patent, did you have an opportunity to look at the British patents at all? A. Oh, yes.

Q. Are the claims in the British patent, insofar as you remember, the same as the claims that are before this court today? A. You mean the British patent is identical to the one applied for in the United States?

Q. That is correct. A. I haven't been able to compare the two. I am only familiar with the British patent.

Q. So you are not sure when you talk in terms of circumventing, that we are talking about circumventing the same thing? A. I would assume there is a similarity, of course, between the two, the British patent and the United States application.

Q. But you are not sure? A. If I was asked to circumvent the United States application, I would expect that I would be faced with similar problems as when I tried to do it with the British one.

Q. Now, if we could turn—I think you answered the question.

170 If we could turn in the record, please, to the Aylsworth patent, and this is Paper A in Defendant's exhibit 1.

The Court: That is No. 1,139,470?

The Witness: Yes, I have it.

By Mr. Parker:

Q. Are you with us, sir? A. Yes.

Q. Now, I want to ask you, if you please, to look in column one, line 48, and does Aylsworth tell us anything at all about the liquids, that is, the lacquer, that he is to immerse his wooden article in? About the temperature of

that, what does he say? A. Are you referring to where we start: "Next, the object, before it has had a chance to cool, is dipped"—

Q. Will you continue to read, please? Will you begin on line 47 and read the next two lines, please. A. "Next, the object, before it has had a chance to cool, is dipped in or coated with a cold solution or fluid form of the varnish or coating composition to be applied"—

Q. So he tells us something about the temperature of that coating composition. He tells us it is a cool or 171 a cold solution, does he not? A. He does.

Q. Does this convey anything to you, sir, as a temperature differential? A. The difference simply between a cold solution and whatever temperature the basic material is being brought up to.

Q. But we are not using a warm solution there? A. No.

Q. So there is some temperature differential? A. Yes, there is a temperature differential there.

Q. Now, I would ask, if you please, if you would turn to Exhibit E, and this is the Taylor patent, which bears the No. 1,435,031, Defendant's Exhibit 1. A. Yes.

Q. Do you have the Taylor patent? A. Yes.

Q. Now, Taylor also, and I want to stress this, was interested in surface heating, and I would call your attention to column 2, line 62, and ask if yours conveys to you surface heating?

The Court: The sentence beginning: "If the specific gravity of the wood is near"—is that it?

Mr. Parker: Heat.

The Court: Then you are in the middle of the 172 sentence. "Then heat is applied to the surface of the wood"—

Mr. Parker: Yes.

The Court: Have you found that, sir?

The Witness: Yes, I have it.

By Mr. Parker:

Q. Does this convey to you superficial heating? You read this, and you are skilled in the art, as you testified. What would this mean to you? A. Well, it depends on what it is for. I don't think this could possibly be superficial because we require surface heating to carry out the teachings of this patent.

Q. Excuse me. How deep a heat would this be? A. I should think it would be considerable.

Q. Considerable? A. Yes.

Q. Now, let's refer back to that same point to column 1 and look in line—the sentence beginning in line 31, the ends of the logs. Would you read that sentence? A. Yes. "The ends of the logs are then rapidly heated by a blast of hot dry air or by the application of a heated plate of iron for a few seconds of time or by any other suitable means to a temperature above the temperature of 173 the liquid to be afterwards applied"—

Q. In spite of the fact that he mentions rapid heating for a few seconds, you believe this would be heating to a considerable extent? A. In the terms of what it requires, I would expect it to be—it must be a severe temperature to carry out the operation.

Q. Now, in the operation that Mr. Levring has presented, we heat here a surface and in terms of time, do we not? A. Yes, but here it is necessary—we are talking of—we are taking things out of context here. Here it is necessary for a function of preventing the chilling of wax.

Q. I am asking you now as an expert in the art, having read this, I would ask the question: What would this convey to you in terms of the depth of the heat? A. Well, in the manner in which it is applied, I would think it would still be a considerable penetration because it is direct contact with the source—almost direct contact except in the case where—certainly the plate of iron is direct con-

tact, and this would be very severe even though it is only applied for a few seconds.

174 The other one, a blast of hot dry air, it is relative to how severe that is but it would have to be severe in order to give the penetration necessary otherwise, you would have not achieved what he wants to do, and even though it is only a few seconds, it is not superficial.

Q. It is superficial? A. It is not superficial. It can't be superficial.

Q. It can't be superficial? A. Yes, even though it is only a few seconds.

Q. Now, you talked in terms of the lacquer here, and in terms of it being chilled. A. Yes.

Q. You distinguished what is said here from what is done in the Levring process on the basis of this chilling, is that correct? A. I said—

Q. You said in your case, in the case at hand here, that is, the case in the Taylor patent, that you would not have to chill it because it would have some adverse effects, is that not true? A. In the case of the Taylor patent, if they would chill the material too rapidly it would
175 solidify and would prevent the operation necessary to penetrate the wood.

Now, if you want to refer to the reduction in temperature of the Levring process, the reduction in temperature, if we are referring to the 50 degrees, is too that after the reduction in temperature, it is to give—it is linked with a certain surface temperature. It is necessary.

Q. But in the Levring process, you would not want to chill, either, would you, because if you chill, would you even be able to get that piece of wood out of the bath?
A. Out of the—

Q. Out of the bath, a dip? A. Well, it doesn't go through a dipping process.

Q. Excuse me. A. It doesn't go through a dipping process.

The Court: Is it sprayed on?

The Witness: Curtain coating. Lacquer is passed through—

The Court: Yes, I have seen the picture in the exhibit.

Mr. Parker: Did he finish answering your question, Your Honor?

The Court: Yes.

By Mr. Parker:

176 Q. I pass you now a copy of the claims in the Levring patent which are found on pages 98 and 99 of the File Wrapper.

I call to your attention Claim 9, and ask if there is anything in that claim, in your mind, to limit this to a curtain coating as distinguished from a dipping operation? A. No. I referred to a curtain coating because in order to obtain the speed of the production necessary, this is the best form of application but here it does not.

Q. The answer is no, there is nothing in that claim? A. About curtain coating?

Q. Yes. A. Only coating the surface.

Q. That's right. Coating of a surface is broad enough to include swabbing and brushing and dipping and any other method that you might think of, is that correct?

A. Well, to do it—no, I disagree. In the teachings of the Levring patent, it does to some extent presume that you are using more advanced methods of coating since the purpose of the patent is to produce a highly commercial type of finish.

Q. Now, you are talking about the teachings of the Levring patent.

I would like to refer back, if you please, to the
177 claim of the Levring patent, because, after all—

The Court: Claim 9, is it?

Mr. Parker: Claim 9.

The Witness: Yes.

By Mr. Parker:

Q. Now, in that he uses the word coating, doesn't he?

A. Yes.

Q. And it does not tell us whether that coating is swabbing, dipping, painting or anything else, does it? A. It doesn't.

Q. It does not? A. No, it refers to coating only.

Q. All right. So insofar as this chilling operation is concerned, again within the limits of the claim, then if you selected a dipping operation, would not want the lacquer to be chilled, either, would you? A. Well, it really isn't applying my experience of this.

Q. Could you answer this question: In the light of the way I put it to you as an expert in the art, could you—

A. Could you just repeat the question again, please?

Q. In the light of the claim here, if we read this to include a dipping operation—

178 The Court: Now, you are referring specifically to the use of the word "coating", is that it?

Mr. Parker: That is correct.

By Mr. Parker:

Q. Insofar as coating is concerned, and particularly the way it relates to the Taylor patent, which said they did not want the lacquer to be chilled, and you made a distinction here, and insofar as the Levring process is defined in that claim as it relates to coating, you would not want your coating, if it were in the form of a dip, to be chilled, would you? A. Oh, yes, there is a form of chilling necessary in order to—when I said not chilling, it is a wrong—it is the reduction of temperature at least to the degree necessary.

Q. If I understand you, then there is no dipping in what you are desirous of obtaining and what is recited— A. No, I can't accept that.

Q. Let me finish the question, and then you can answer it.

Between what is recited in the Taylor patent, and again, I call your attention to the Taylor patent, if you want to take a look at it, Paper No. E and Defendant's exhibit No. 1, and I call your attention to the sentence beginning with the ends in line 31 of column 1 and more particularly 179 I call your attention to the last two lines of that sentence. A. Yes.

Q. Have you that before you, sir, the ends of the logs—
A. Yes, I read it.

Q. So that the liquids would readily penetrate and not become chilled.

Now, if I recall your testimony, you distinguished what is desired here from what you have because in this patent, they do not want the ends to become chilled upon immersing in the lacquer. A. All right.

Q. Now, if I understand you correctly, again, in the light of the claim, do you want your end to become chilled upon immersing or do you want your end not to be chilled?

A. Now, we don't want—chilling would be detrimental to the coating as the chilling you speak of. We want a reduction in temperature.

Q. But you don't want it chilled? A. We don't require chilling.

Q. All right, that answered the question.

Now, you talked in terms of total time of your 180 operation. A. Yes.

Q. That is, the coating and the subsequent drying step? A. Yes.

Q. Now, is there anything in that claim, and again, I call your attention to the claim found in the File Wrapper, Claim 9 that relates to—that is at page 98 of the File Wrapper and I will pass a copy up again. A. Claim 9.

Q. Yes. Is there anything in that claim whatsoever that relates to the total time of this operation? A. There is a time limitation.

Q. No total time. In other words, when you have finished your dipping operation— A. In this not exceeding 120 seconds.

Q. That is for the dipping operation? A. That is for the coating.

Q. But once it has been dipped, and you are desirous of curing the surface coated, is there any limitation in there as to the length of time that you either blow air on it as recited in Claim 8 before you? A. You mean after dipping?

Q. That's right. Is there any limitation as to
181 time there? A. There is no reference here after coating.

Q. That's right. Is there any limitation in Claim— A. You mentioned Claim 8. I don't have Claim 8 here.

Q. Do you have Claim 8 in front of you? I mean, Claim 10; I am sorry.

Claim 10, and is there any limitation in there as to the length of time you blow air on it to cure it after your coating operation? A. This doesn't give any limitation of time.

Q. Now, if you drop, please to Claim 12, does not Claim 12 call for an after heating operation or baking operation? A. There is no Claim 12 here. There is a Claim 11.

Q. I am sorry. A. Yes.

Q. I am now talking about Claim 11. A. May I read it, sir?

Q. Yes, go right ahead.

Mr. Parker: That would be found on page 98.

The Court: I have it.

The Witness: Yes, it refers to a re-heating the coated surface.

By Mr. Parker:

182 Q. That is a re-heating operation and very similar to a baking operation? A. As we call it, a post-heating operation.

Q. Now, is there any indication as to how long you post-heat? A. There isn't, no.

Q. No limitation whatsoever? A. Not on post-heating.

Q. That is correct.

Thank you very much.

The Court: I am concerned about this claim.

Claim 11: "A method of coating the surface of a wooden article with a lacquer finish."

Then there is some insertion, and it continues: "Which comprises superficially heating the surface of said wooden article for a period not exceeding 120 seconds"—

Is that the right claim?

Mr. Parker: Yes, sir, then the last three lines.

The Court: "The temperature of the surface will drop by at least 50 degrees F. and thereafter reheating the coated surface to a temperature sufficient to cause a polymerization of said lacquer."

183 The polymerization, the so-called change, that involves an element of time?

Mr. Parker: It involves an element of time but it is not specified in the claim to minutes or hours.

The Court: Yes, I know, but it is a word of art in relation to the process indicated here. One skilled in the art, the period of time would be evident.

In other words, it isn't evident to me because I don't know how long it takes for that.

Mr. Parker: The point I was trying to get, Your Honor, was in the Aylsworth patent, they talk about baking and the point I am trying to make is there no difference between the lacquer used here and the subsequent reheating insofar as time is concerned.

This is what I was trying to get to.

The Court: I see. Thank you.

Mr. Parker: He has answered my question, Your Honor.

The Court: I have no question pending.

Mr. Parker: Did I answer your question, Your Honor?

The Court: Yes.

By Mr. Parker:

Q. Now, I would like, if you will, to turn to the
184 Gard patent, and this is Paper C, in Defendant's exhibit 1, No. 2,631,109. A. I got it.

Q. And I would refer you, please, to figure 1 of that patent, which shows a diagram.

The Court: Figure one, that is the page immediately preceding the text of the patent, and that is a diagram, and the date it is filed is December 8, 1948, and the date in black letters, March 10, 1953, and then Form Blank, Dielectrically Dry, Heat Above 212 degrees F., Impregnate. Is that right?

Mr. Parker: Yes.

By Mr. Parker:

Q. Sir, as we go through this, I would ask you to go through the steps with me.

First, he forms his blank, does he not, according to the diagram? A. Yes.

Q. Then he dielectrically dries this? A. Yes.

Q. Is that correct? A. That is correct.

Q. Then after the wood is dry, he had his next
185 step, assuming we have dry wood at that stage, and we heat it to above 212 degrees. A. Yes.

Q. You see that in the diagram? A. Yes.

Q. This is within the range of the temperature used by Levring? A. Well, this is a temperature without reference to time.

Q. I just asked one question. Is this within the range used by Mr. Levring? A. It is within the range, yes.

Q. Now, once he raises it to this temperature, then he impregnates it by coating, by dipping? I am talking about the diagram shown. A. Yes.

Q. Is that correct? A. Yes, that is correct.

Q. Now, then, if we want to get—Gard also tells us about the temperature differential there, and I would ask you to take a look again at column 5 in the Gard patent, line 23, there. A. Line 23?

Q. Yes. Now, Gard tells us again about this 50
186 degrees temperature differential, at least 50 degrees, does he not?

The Court: What column is that?

Mr. Parker: Column 5, line 22 actually to line 23.

The Court: You went into that earlier?

Mr. Parker: Yes, sir.

The Court: With the former witness?

By Mr. Parker:

Q. And he had at least a 50 degree temperature differential? A. Yes.

Q. Between the 212 degrees? A. Yes.

Q. And the temperature— A. Yes.

Q. Of the impregnant? A. Yes.

Q. Now, I want to ask you, if you will, to turn to column 7 of the Gard patent, and ask again, if you would read the second full paragraph beginning with line 17 with the word "generally"? A. Yes.

Q. Read this to yourself if your desire. A. How far do you wish me to read?

187 Q. Just the short paragraph. A. Yes.

Q. Now, Gard talks about localizing the heat, does he not? A. This is localized heating.

Q. What does this mean to you? Does it mean we can get surface heating? A. Oh, definitely not.

Q. If we put the two electrodes side by side, is it my understanding, insofar as you understand it, that it would not work? A. It would not give surface heating.

Q. What kind of heating would we get? A. You would get heating completely through the cross-section of the contact portion of the electrodes. I would—

Q. Excuse me. Go right ahead. A. I would say that you would get immediate heat generated throughout the cross-section of the section that is placed between the electrodes.

Q. So if we have any— A. You would get localized heating throughout that section but you would not get surface heating. It is impossible.

188 Q. If I understand you correctly, and using the pencil as an illustration, if I put the two electrodes side by side on this surface of the pencil— A. Top and bottom.

Q. Then the heat would not go from one electrode to the other but would go through the material, is that correct? A. It would go directly through the section of the pencil.

Mr. Parker: Your Honor, this is all I have of this witness.

The Witness: Is it possible for me to ask a question?

The Court: You may qualify your answer. Is that what you want to do?

The Witness: I understood that this question was in two parts. I only answered one part.

Mr. Parker: That is all I intended to ask.

The Court: Wait a minute, please.

We will have the question read back and if it is in two parts, you may answer it.

Of course, he is entitled to answer the question in two parts even though you are satisfied with what he said.

The Witness: I was asked to read the two sections of the patent.

The Court: Let's find out what the question is first.

189 Mr. Parker: I am sorry, Your Honor. I only asked the one question.

The Court: We will find out what it is first.

(The last series of questions and answers was read)

The Court: You mean electrode?

The Witness: That's right. It is just my pronunciation. They both mean the same thing.

The Court: You have a little bit of a Brooklyn accent, don't you?

All right. Did you want to say something further? Did you want to qualify your answer?

The Witness: That would be correct there.

Mr. Kaul: I would like to elaborate on that.

One problem that came up in view of Mr. Parker's questioning, Your Honor, and truthfully one we did not think about.

Mr. Parker suggested that possibly the British patent might be directed to a different invention than the patent at issue here.

The Court: Well, I think it was in relation to what was claimed in the British patent and what was claimed in the Claim, Claim 9.

190 Mr. Kaul: May I, with Your Honor's permission, read the claim of the British patent into the record? This is the sole independent claim which appears in the corresponding British patent and it is 851,540.

And it reads: "A process of coating a porous surface of an article, e.g., a wooden article which comprises the step of heating said surface within an interval of time not exceeding 120 seconds to a temperature being considerably higher than room temperature, say between 150 degrees and 390 degrees Fahrenheit, and subsequently applying to said surface while hot, a finish in a liquid state, and of a temperature sufficiently low to cause a sudden reduction of temperature of said surface to a temperature being at least 50 degrees Fahrenheit lower than the temperature to which said surface was heated, however, not below ordinary room temperature."

Redirect Examination

By Mr. Kaul:

Q. Now, you have heard that claim read into the record. Is that the claim against which you conducted your laboratory experiments? A. Yes, it is.

Q. Does that claim correspond substantially with the claim as far as the limits are concerned, and so on,
191 with the claim which you read out of the record when Mr. Parker was questioning you? A. Yes, it is.

Q. Now, did you also testify that at the time you were conducting your tests, you had no knowledge of any of these three patents in question here today, is that right? A. I had no knowledge.

Q. What I would like to know is if you had knowledge of these patents, and at that time, would—

The Court: I think he made that clear. In other words, it wouldn't have in any way led him to the steps that were taken in the Levring process.

By Mr. Kaul:

Q. Now, I would like to direct your attention again to the claim that—where is Plaintiff's Exhibit 1?

The Court: The File Wrapper.

Mr. Kaul: Yes.

By Mr. Kaul:

Q. You were questioned in some detail about the claim appearing here on page 98 as to what it might say and what it might not say.

The Court: I think the question of counsel for 192 the Patent Office was directed specifically to Claim 11 which appears on page 99.

Mr. Kaul: I think it was Claims 9, 10 and 11, but any way, the point is the same on Claim 9, 10 and 11.

By Mr. Kaul:

Q. For either Claim 9 or 11, will you read there and tell me what appears after the heating for the time less 120 seconds. What is the next word that appears? A. After 120 degrees Fahrenheit and 350 degrees—

Q. All right. Keep reading then. A. "And immediately thereafter"—

Q. That is enough. "Immediately thereafter". A. Yes.

Q. Is that when you applied the coating, immediately thereafter? A. That is so, yes, immediately.

The Court: Now, does the claim say that?

Mr. Kaul: That is a quote from the claim, Your Honor.

The Court: Immediately thereafter then what?

By Mr. Kaul:

Q. All right. Immediately thereafter what? A. "Immediately thereafter applying to the surface of said article a lacquer finish."

193 This question of immediately after is very important. It must be almost instantly.

Q. So we have heated for less than 120 seconds and the claim specifies that. Then we immediately apply the coating, and then what does the claim say happens? A. "The temperature of which is selected so that upon the application of the lacquer to the surface of the article the temperature of the surface of the article will immediately drop by at least 50 degrees Fahrenheit."

Q. It says immediately drop? A. Yes.

Q. So we are talking in terms of how long the process, according to this claim, would take. Soon as you finish the heating, what do you do immediately? You immediately apply the coating, is that right? A. That is right.

Q. Then after the coating is applied, what happens, it immediately drops 50 degrees, is that correct? A. Immediately, yes. There is a matter of about two or three seconds between the transfer from the application of the temperature to the application of the coating and the complete 50 degrees drop or more.

194 Q. All right. Now, looking at Claim 11, it specifies the type of lacquer what is used.

Well, I don't think you will be able to read it from there but let's read it out of the answer which was filed before the Board of Appeals because that is written in by the Clerk at the Patent Office. It is typed in.

I now refer to page 119 of exhibit 1 where it is typed in and ask you to read the first two lines. A. "A method of coating the surface of a wooden article with a lacquer finish of the type hardenable by polymerization"—

Q. Hardenable by polymerization. Now, as one skilled in the art, do you know the type of lacquer or class of lacquer to which this would refer? A. Yes.

Q. All right. Is this claim later on specified a reheating step until polymerization occurs? A. It does, yes.

Q. Does polymerization occur at different times for different types of lacquer finishes? A. Yes, there is quite a variation.

The Court: Polymerization for me, going back many years, isn't that sort of a molecular union without changing the molecular weight?

Mr. Kaul: I am not certain. Perhaps we might let the witness answer that.

The Court: Are you a chemist?

The Witness: Well, I have sufficient experience in—

The Court: You are better able to help us than anybody else here.

The Witness: It is a cross-link of the molecular structure of the materials and—

The Court: No change in the molecular weight?

The Witness: No, just a cross-link, and this creates the curing of the materials.

By Mr. Kaul:

Q. Is it more or less of a bonding, would you say?

The Court: It is a linkage.

The Witness: Yes, it is a linkage.

By Mr. Kaul:

Q. Now we have specified the class of lacquer, the type hardenable by polymerization, and you say you know this class.

Within that class, are there different types of materials some of which would polymerize quicker than others? A.

Yes, but there are some that would require only the application of pre-heating.

The Court: That answered my question because I thought the time element would be the same, would it not?

Mr. Kaul: That is the point I was trying to bring out, Your Honor.

The Court: You don't have to now.

By Mr. Kaul:

Q. Now, I have one question here which is sort of a general question interpreting the subject matter at issue, and all of these other patents and that has to do with heating times and heating temperatures.

Don't you always have to consider the time of heating in conjunction with the temperature of heating to get a certain effect? A. Oh, yes.

Q. In other words, a very high heat for a short time might be equivalent to a slow heat for a long time or vice versa? A. There is a relationship, yes.

Q. Now, referring you to the Gard patent, would you look at that patent?

In the Gard patent we have had some testimony
197 as to what is meant in column 5 when he talks about his 50 degree temperature differential.

Without belaboring the point, let me ask you what is Gard trying to accomplish at that point where he dips it with a temperature differential?

The Court: Is this it? "A temperature differential of at least 50 degrees F. should exist for economical commercial practice with most woods and usual impregnants."

Mr. Kaul: Yes.

By Mr. Kaul:

Q. At that point, would you say it is accurate, Mr. Taylor, in interpreting this patent that Gard is dipping his heated article into the impregnant material and that the 50 degree temperature differential should exist between the article and the— A. Here he means a difference between the lacquer—the material he is dipping it in and the article.

Q. Now, what I would like to know is what is he doing at that point? What does he do when he dips the article into the bucket of impregnant? Is he trying to get a surface coating? A. He is—

198 The Court: A bucket of what?

Mr. Kaul: Impregnating material.

The Court: You don't mind me interrupting?

Mr. Kaul: Not at all.

The Court: What would the impregnating material be?

The Witness: This is a wax solution.

Mr. Kaul: I believe, Your Honor, further in line 5 he mentioned one example, ceresin wax.

The Court: What?

Mr. Kaul: Ceresin wax.

The Court: Where are you reading?

Mr. Kaul: Column 5, lines 42 through 50.

The Court: It is pronounced ceresin wax.

Mr. Kaul: I stand corrected.

The Court: Mr. Parker, are you a chemist by training?

Mr. Parker: No, I am not. I am a civil engineer by training.

The Court: Ceresin wax, what sort of wax is that?

Mr. Kaul: I have to plead ignorant, too, Your Honor. I am a mechanical engineer by background, and I am not trying in any way to suggest that the Gard patent has to be limited to this type of wax, whatever type of im-
199 pregnating material he wants to use.

By Mr. Kaul:

Q. I would like Mr. Taylor to tell us what is Gard attempting to do when he dips this hot article into the impregnating material? What does he want to get? Is he interested in getting a surface finishing? A. No, he is purely interested in the impregnation of this material into the structure of the timber.

Q. All right. Would you turn now to the first page of that patent and in column 2, you will note the first full paragraph there, and about line 3, and would you read that out loud? A. "A more specific object of the invention is to provide a method of impregnating wood by which the pores of the wood may be impregnated substantially through the entire extent of the body of the wood, leaving no space within the body for moisture."

Q. Is this anything like the Levring process? A. No, it cannot be compared in any way whatsoever.

Q. So even if we wanted to assume, and we are necessarily assuming this, but let's assume that the word temperature differential as Gard uses it is some how
200 the same as temperature drop as Mr. Levring would use it— A. Yes.

Q. Does Gard in any way want to accomplish the same purpose with his temperature drop as Mr. Levring does with his? A. No, there is a difference between the two. One is a temperature differential and the other is a quenching.

Q. Well, let's assume that Gard said a 50 degree temperature drop. A. Yes.

Q. Just like the claim and assume he said that. What is he trying to do with this 50 degree temperature drop? Is he not trying to get the impregnant into the wood just as he says here in this object? A. That is so.

Q. What does the 50 degree temperature drop do in Mr. Levring's process? A. In the case of the Levring process, it is first that in order to get this reduction in temperature, you must achieve a certain degree of surface temperature.

Q. Let's assume that we have that. What does the 50 degree drop do? A. It is an important part of it.
201 Without this high degree—without this degree of surface temperature, when you finally quench with a coating of the lacquer, if you don't get this 50 degree drop, you would not have achieved the correct degree of surface temperature. It only serves as a measure for the temperature that you wish to achieve on the surface.

Q. Could we say that in the Levring process, there is a form of temperature equalization when the coating material is applied? A. Oh, yes, in a degree, it would amount to that.

Q. All right. Would there be a heat transfer from the heated surface, superficial layer, on to the coating material and vice versa? A. This is what you would call a mixture temperature of the lacquer on the timber.

Q. And that is what occurs at the 50 degree drop? A. The 50 degree temperature reduction occurs at that time on the surface of the panel.

Q. Now, of course, in Gard's patent, he has emphasized, particularly in column 2, that he wants the interior of the wood to be at least as hot or hotter than the surface.

Now, if we have the interior of the wood as hot as the surface, let's assume that we put on the coating
202 material. What would happen at that point? Would you get your temperature equalization? A. No, it would not be a sufficient reduction in temperature.

Q. You would not get the 50 degree temperature drop? A. Because the dissipation of temperature in the surface at the moment of application would be retarded by the depth of heat in the board.

Q. Now, finally, let me elaborate on this dielectric heating.

As Mr. Parker put the question to you, you testified that if the electrodes were on the top and bottom pencil, there would be a direct heat transfer through the pencil, is that correct? A. Yes.

Q. Now, I think the point that Mr. Parker was getting at and he can tell me if I am correct, is that what would happen if you put them side by side on the same surface? Is that the point you were trying to get across?

Let's assume that this tablet was the piece that you wanted to heat. Could you take a dielectric—one of the electrodes of a dielectric heater and put it here on the
203 top and another one and space it away here on the top, and would you get any dielectric heating effect at all? (Indicating) A. I am not aware that it would operate correctly.

Q. Would it operate at all? A. I don't know sufficiently about the equipment.

Q. Doesn't a dielectric heater create an electrical transfer from one electrode to the other? A. That is true in that sense.

The Court: Electric transfer of heat?

By Mr. Kaul:

Q. Isn't it the electrical transfer that causes the heat to—

The Court: That is the ultimate purpose.

Mr. Kaul: The transfer of electricity creates heat.

By Mr. Kaul:

Q. Is it not customary and to your knowledge the only way to use a dielectric heater is to use the two electrodes in opposition to one another? A. As far as I know, yes.

Q. Let me refer to column 3 of the Gard patent, line 64 where it says: "The blank is placed between electrodes"—

Does not that suggest to you that there is an upper
204 and lower or a right and a left? A. It does.

Q. And there is a transfer through the blank as Gard says—continuing down in line 74—73 and 74, "heat is generated substantially uniformly throughout the extent of the blank"— A. Yes, that is so, yes.

Q. Is that the only way that you know of which a dielectric heater would work? A. Yes, to my knowledge.

Mr. Kaul: I have no further questions.

The Court: All right.

Mr. Parker: Just two questions on recross, Your Honor.

Recross Examination

By Mr. Parker:

Q. Mr. Taylor, I turn now again to the Gard patent, Paper C. A. Yes.

Q. Column 7, and the patent bears the No. 2,631,109 and I again am looking at the second full paragraph on that page.

The Court: "Generally it is desirable"—

205 Mr. Parker: Yes.

By Mr. Parker:

Q. I would ask you to read that silently. A. On Page 7?

Q. Column 7. A. Column 7.

Q. Would you read that paragraph again silently, and then I would like to ask you two questions about it, please.

A. "Generally it is desirable to impregnate the whole of the article, but within the present invention it is possible to localize the heating and impregnate only in those areas which have been heated. For example, a local impregnation of end sections of wood is frequently desired, and this may be economically accomplished by the method of this invention."

Q. All right. Now, he tell us that he can localize this heating, does he not? A. That is true, yes.

Q. All right. Now, he tell us that he localizes it to the extent that he can only heat the ends of logs, is that not correct? A. Yes, that is true. It depends on what he means by the ends of the logs.

206 Q. Yes. Then he can impregnate that end of the log, can he not? A. Yes.

Q. Now, if we assume the situation presented to you just a moment ago by Mr. Kaul, where we had a pad of wood and if we turn this on end and assuming for the moment, if you will, that we have to place one electrode above it, and one electrode below it, and from what you just read, is it not possible to so place those that you can only heat the end of this tablet? (Indicating) A. It would have the depth of heat as well.

Q. That would depend on the size of the electrodes, would it not? A. Possibly, yes, but we are stretching a point here.

Mr. Parker: Thank you, Your Honor. That is all I have.

The Court: All right. Thank you.

Mr. Kaul: We would like to call as our last witness Mr. Jensen and as he pronounces it, Yensen.

The Court: I suppose that is the Danish pronunciation?

Mr. Kaul: Yes. I will call him that but the record will show it is spelled J-E-N-S-E-N.

207 The Court: All right.

Mr. Kaul: Mr. Jensen is the production manager of the largest flooring mill in Europe.

This flooring mill has used the Levring process for a period of almost ten years now.

Mr. Jensen is personally familiar with it and has practiced it every day and has spoken to others who have visited his plant and so on and tests and—

The Court: All right.

Mr. Kaul: He can testify as to the prior art, also.

Uffe Jensen

was called as a witness by and on behalf of the plaintiff, and having been first duly sworn, was examined and testified as follows:

The Court: I might make a suggestion to you: Why not interrogate him as to the prior art first after you qualify him? Does that up-set your order of business?

Mr. Kaul: Not at all, Your Honor. As a matter of fact, in view of the fact that we had so much testimony, I was going to have him moreorless summarize and then—

The Court: All right. Then you may proceed in the fashion which you started to proceed.

Mr. Kaul: Let me just get his qualifications and then—

208 The Court: All right.

Direct Examination

By Mr. Kaul:

Q. Would you state your name, please? A. Uffe Jensen.

Q. And your age? A. I am 40 years old.

Q. And what is your resident address? A. Koege, Denmark.

Q. And what is your educational background? A. I have a degree from the Technical University of Copenhagen, a master of science as a mechanical engineer.

Q. What is your occupation? A. I am production manager of Junckers Sawmill.

Q. Do you or your company have any financial interest in this law suit involved here today? A. No.

Q. Now, let me ask you at this point, are you familiar with the Levring process involved in this suit? A. Well, we have used the Levring process since 1955.

Q. So you are familiar with it? A. I am familiar with it, yes.

209 Q. Now, have you sat in the court room today and heard the other two previous witnesses testify?

A. Yes, I have heard it and I have understood it.

Q. You what? A. And I have understood it.

Q. Have you heard their testimony as to the prior patents? A. I did.

Q. Do you agree with their — A. I agree with them.

The Court: I assume that when you say you agree, that you have read the patents?

The Witness: Yes.

The Court: You have read the Aylsworth patent, the Gard patent and the Taylor patent. Are you familiar with their contents?

The Witness: Yes.

The Court: Do you agree with the analysis made of those patents by the witnesses who have taken the stand here?

The Witness: Yes.

By Mr. Kaul:

Q. Without belaboring the patents in detail, let me ask you—let me direct your attention to the Aylsworth
210 patent in the exhibit before you. A. The first one?

Q. Yes.

Do you recognize that Aylsworth teaches a process of heating for several hours before applying the coating material? A. Yes.

Q. And you note in line 44, column 1, that he uses the terms “thoroughly dry”? A. Yes.

Q. That he wants to heat it long enough to thoroughly dry it? A. Yes.

Q. What do you understand the words “thoroughly dry” to mean? A. It means to take away moisture content from the item.

Q. Does the Levring process do this? A. No, not at all.

Q. Does the Levring process want to do this? A. In our plant it is essential that parquet boards which we produce will be delivered at a given degree of moisture content.

Q. Well, in other words, would you say that the
211 Levring process does not want to thoroughly dry out the moisture? A. No, it doesn't.

Q. You also are familiar with the fact that the Aylsworth patent suggests that after the coating material is applied, there is a baking for one to six hours? A. Yes, I am.

Q. Does the Levring process use any such baking step? A. No, and in a commercial scale, it wouldn't be practical to use about six hours or so. It would be—the costs would be too high.

Q. Would it be accurate to summarize the Aylsworth process by saying that he heats for several hours and then applies the coating material and bakes from one to several hours? Is that an accurate summary? A. It is an accurate summary.

Q. Would a process like that be of any value to your company? A. No.

Q. Thank you.

Now, let's refer to the Gard patent, and I specifically first direct your attention to the first paragraph of the first page of that patent where Gard suggests that
212 the invention relates to a method of removing the water from the wood until its water content is essentially zero.

Again, would this be of any value to your company? A. No, we could not use it.

Q. Is it in fact exactly what you do not want to do? A. What we do not—no, no.

Q. You do want to maintain— A. The method we use now, doesn't make any changes in the moisture content.

Q. All right. I refer you to—you testified that you are familiar with the Gard patent and let's refer over to column 7 and there has been much testimony on this point

as to the meaning of the localized heating as used in this context. A. Yes.

Q. Do you believe that this refers to a superficial heating? A. No, it doesn't. From what I mean, it belongs to sectional heating or a given area.

Q. It does here say that you can heat the end section of the wood, does it not? A. Yes.

213 Q. That is dielectric heating? A. Yes.

Q. Let's assume that—let's look at this whole table here and assume that we wanted to coat the whole table, first of all. A. Yes.

Q. And let's assume—

The Court: Let the record indicate that he is pointing to counsel table.

Mr. Kaul: Pointing to the table for plaintiff's counsel.

By Mr. Kaul:

Q. Let's assume that we want to dielectrically heat the upper or the central portion of this table all along its length.

We place an electrode on top and extend it all the way across the table and we place one on the bottom and extend it all the way under the table and put them in contact with the table. Would we get a dielectric heat throughout the length of the table and throughout its thickness? A. Yes, we would.

Q. Suppose we only wanted dielectric heat in this forward end, this one foot that is closest to the bench here.

214 Suppose I put one electrode extending across the table here, about the width of one foot or so, and another one under the table. Would I get dielectric heating on this one foot area on the end of the table? A. Yes.

Q. Would the heat be through the thickness of the table? A. Through the thickness, yes.

Q. Would it be a superficial heating in any sense of the word? A. No.

Q. Now, finally, let's refer to the Taylor patent. Does this—are you familiar with this patent? A. I have read it, yes.

Q. Does it suggest the use of melted paraffin for the water-proofing of logs? A. In our plants it would be impossible to do it.

Q. No. I think you gave me a non-responsive answer.

Does it specify the use of melted paraffin? A. Yes.

Q. Does it specify the use of any other material other than melted paraffin? A. Not as far as I know, no.

Q. Is melted paraffin a material that you could
215 use in the surface finishing of any wooden articles in your plant? A. No.

Q. Is it a material that is even used for the surface finishing industry at all? A. Not as far as I know, no.

Q. Would you say that the surface finishing industry is the art to which Mr. Levring's invention pertains? A. Yes, it must be so.

Q. Now, before we get a little further, let me ask you one further question about the patent before you.

You, as a person having skill in the art, are presumably aware of various treating processes used in the industry, is that correct? A. Yes, we are.

Q. If someone came to you and showed you the Aylsworth patent and the Taylor patent and the Gard patent, and said to you, Mr. Jensen, here are three patents. I would like you to combine them in some manner which would come up with a process similar to Mr. Levring's. Would it be obvious to you how to combine these patents? A. No. Whatever we did, we couldn't avoid drying out the material throughout.

216 Q. All right.

I think those are all the questions I have on those patents.

Now, let me ask you what your occupation is. A. I am production manager.

Q. What is the company's name? A. Junckers Sawmill. It is the biggest parquet floor mill in Europe with a production of about 3,000,000 square meter surface boards.

The Court: A year?

The Witness: Yes, a year.

The Court: Did you say a million or a billion?

The Witness: A million.

Mr. Kaul: Let me ask the reporter: Do you understand when he says parquet? P-A-R-Q-U-E-T.

By Mr. Kaul:

Q. Are the products of your sawmill sold in many countries? A. In different plants, yes, that is right.

The Court: Mostly in Europe?

The Witness: Yes, mostly in Europe. About 85 per cent of the production is sold in Denmark and the rest in
217 other countries, Your Honor.

The Court: So-called Western Europe?

The Witness: Western Europe, yes.

By Mr. Kaul:

Q. Now, how long have you been with the company? A. I have been there since '53.

Q. What positions have you held since you have been with them? A. When I was employed with the company, I was a construction engineer, and after some years, I got the job of Chief of the Engineer Department, Planning Department, and in '61, I got the job as production manager.

Q. What are your duties as production manager? A. Oh, I am responsible for the production of parquet floors.

Q. Based upon your experience in this field and your education, do you consider yourself to be generally knowledgeable of the practices within the surface finishing industry? A. Yes.

Q. When did you first hear of the Levring process? A. Oh, I first heard of Mr. Levring was in October of '54.

The real contact with Mr. Levring was in the beginning of '55.
218

Q. Did you have any interest in developing some type of a new or different finishing procedure at that time?

A. Yes. You see, until that time, we did not treat or coat our boards at all.

Q. You did not treat them? A. No, did not until '55.

The Court: You shipped them out as raw?

The Witness: Yes, raw.

The Court: As they came from the mill?

The Witness: As they came from the molding machine.

By Mr. Kaul:

Q. Did this technique have any disadvantages? A. Yes, it had—it would be a sales point, a sales argument to deliver the boards with a curtain, with a sealer, and, therefore, we decided—I think it was in '54 to find out the best method to do it.

Q. Had you heard of anyone else coating boards at that time or did everyone deliver them raw? A. Yes, we had.

I know that a company in the states, in Memphis—

219 Q. The United States? A. Yes, the United States, and a company had used a process for coating.

Q. What type of process was this? A. I don't know. It was done automatically but I don't know if it was a pre-heating or a post-heating system. I can't say.

Q. Did you enter into negotiations with Mr. Levring at that time? A. Yes, in the beginning of '55 we did, sir.

Q. Did you also enter into negotiations with any other people at that time? A. Yes, we had a connection with—with a German company and we really contemplated buying some equipment from the German company.

Q. What type of equipment were they offering? A. Oh, there was a conventional type, a post-heating system.

Q. What were the results of your initial negotiations with Mr. Levring? Did you immediately decide to buy his process? A. In '55, in April or May, we ordered some

equipment from Mr. Levring. We had bought coating machines ourselves, and we started sort of a corroboration with Mr. Levring in finding out the process which he told us about was a good one.

We had never heard about such a process before, and we wanted to make some tests in our laboratory.

Q. Did you in fact conduct tests? A. Yes, our company—no. You mean if our company was at the top of the tests?

Q. No, no. You told me that you got some equipment from Mr. Levring at that time? A. Yes.

Q. Was this for the purpose of conducting tests to see how his process worked? A. Yes, it was.

Q. Did you conduct such tests? A. Mr. Levring conducted the tests.

The Court: We will suspend for five minutes and give the reporter a little break.

(Whereupon, a short recess was taken.)

The Court: All right.

By Mr. Kaul:

Q. Mr. Jensen, I think we were at the point where you had gotten some equipment from Mr. Levring and—

221 The Court: And had conducted some tests.

By Mr. Kaul:

Q. And had conducted some tests, and we had gotten to the point of who had conducted the tests, you or Mr. Levring? A. Mr. Levring and the staff of Mr. Levring.

Q. They conducted the tests for you? A. Yes, but in cooperation with our laboratory and the chief of our laboratory.

Q. What was the purpose of the tests? A. They were to find out if the process had the advantages which Mr. Levring had told us about.

Q. At the time these tests were conducted, were you still in contact with the German company? A. We were.

Q. And they offered post-heating equipment, is that correct? A. They offered post-heating, yes.

Q. Had you seen the post-heating equipment in operation? A. Yes, I had myself been in Germany and had seen some tests there.

Q. So at this time, after considering both the Levring technique and the German technique, as I understand
222 it, you decided to go with the Levring technique?
A. Yes.

Q. Why was that? A. Oh, we had decided to choose for two reasons. Firstly, we had to demand that the moisture content of our boards shouldn't change under the coating, and, secondly, we wanted to get the most even, nice looking surface coating—coating surface.

Q. All right. After you adopted the Levring technique, did it give you both of these expected advantages? A. They gave us both, yes.

Q. Did it give you any other advantages? A. Yes, we got an advantage more because we got a higher capacity with the equipment which Mr. Levring offered us.

Q. By capacity, do you mean output per day? A. Output per day or per hour.

Q. Is this due to the speed of the Levring process? A. Due to speed, yes.

Q. Have you used the Levring process continuously since it was adopted? A. Yes, until today and we have
223 treated between 11.3 and 11.5 million square meters totally.

Q. What percentage of your operation would you say uses the Levring process? A. Today it is 99 per cent.

Q. Virtually all of it? A. Yes.

The Court: What is the other one per cent doing?

The Witness: It is delivered untreated.

By Mr. Kaul:

Q. I would like to now show you plaintiff's exhibit 15, and ask you to look through that and identify the photographs in there. A. Yes.

Q. Are those photographs of your plant? A. Yes, it is. We have two plants. We have one plant which we bought in '55 and the second which has been in production since '65 and this is the equipment here.

Q. Does that equipment as shown in those photographs actually represent the equipment used commercially in carrying out the Levring process on a day to day basis? A. It is.

Q. Now, when you decided to adopt the Levring
224 process, did you enter into some kind of a royalty or other type of agreement with Mr. Levring? A. No, we do not.

Q. Did you make any type of compensation at all? A. Yes, we can say so. All customers of Mr. Levring who will be interested to look at the plant in production will be allowed to visit us.

Q. In other words, would it be accurate to say that in consideration of Mr. Levring granting you the rights to use his process, you agreed to open your factory to any and all visitors who wanted to see this process? A. Yes, if Mr. Levring wants it.

Q. Have you in fact received any visitors over the years who are interested? A. Oh, yes, we have seen many.

Q. Have you personally spoken to these visitors in your capacity as production manager? A. Yes, for the first five or six years, I myself talked to most of them.

Q. Did most of these people strike you as having skill and experience in this surface finishing industry? A. Yes, most of them.

225 Q. Did any of these people ever suggest to you that they had seen or heard of a similar process being used elsewhere? A. No, most of them were amazed and I have never heard anybody talking about having seen such a plant before.

Q. Based upon your years of experience in this industry and particularly your experience in working with this process every day on a day to day basis, do you believe that this

process has advanced the art of wood finishing? A. Yes, it has. It has been a complete success.

Q. Would you say it has had a significant impact on the industry? A. Yes.

Q. All right. Now, as a final question, again referring to the prior patents before you, I think you heard me summarize for Mr. Taylor the position of the Patent Office, and that position being that a person having ordinary skill in the art of surface finishing, having these patents before him, would have been able to combine them in some manner to arrive at the process which Mr. Levring alleges is his invention.

Could you have made any such combination? A. I couldn't imagine that.

226 Q. In fact, if you had these patents before you, would you have been directed toward making any such combination or away from them? A. I wouldn't have been interested in using them at all.

Mr. Kaul: That completes my direct.

The Court: With reference to Exhibit No. 15, Side No. 1, I take it that is a close-up, so-to-speak, of Figure 2, so-called control-panel in controlroom, is that right?

Let me show it to you.

Mr. Kaul: Perhaps we should have Mr. Jensen testify as to the—

The Court: Do you see what I mean?

The Witness: Side one is the controlling panel?

The Court: Yes, and that represents figure 2 in the long picture. That is a close-up, so-to-speak?

The Witness: Yes, it is.

The Court: All right.

Mr. Kaul: For the record, Your Honor, could we ask him to continue with what is shown on each of the pages?

The Court: Yes, I understand them but I didn't understand the so-called Mimic-diagram.

227 By Mr. Kaul:

Q. May I ask you this one further question, and that is is Figure 6 an over-all view of the entire commercial plant?

A. It is our plant.

The Court: All right, thank you.

Cross-Examination

By Mr. Parker:

Q. Now, Mr. Jensen, you testified that you are skilled in the art, so-to-speak, of floor finishing? A. Yes, as a user in commercial scale, yes.

Q. Have you visited any of the industrial concerns in the U. S. who are engaged in the floor finishing art? A. No, that is the first time I am here.

Q. Have you talked with anyone in the United States? A. No, I haven't.

Q. You have not? A. No.

Q. Then your knowledge of the state of the art is confined then to the European state of the art, is that right? A. It is.

Q. All right. Now, I pass on to you a copy of a claim that is found in File Wrapper, page 98.

Do you have a copy there?

228 The Court: Here is the File Wrapper here.

Mr. Parker: I would like to use this one if I may. Thank you.

By Mr. Parker:

Q. Could I ask you, if you please, to take a moment and look at that, and then I would like to ask you several questions about that claim as it relates to the art. A. Yes. Shall I read it to myself?

Q. Yes. A. I have read it.

Q. Now, as I understand that claim, it calls for two steps, does it not, that is, the step in coating the surface which includes the steps of No. 1, heating that surface— A. Yes.

Q. And then applying the coating immediately after. Two steps, is it not? A. Yes.

Q. Now, I would ask you, if you will, to please turn to Paper A in Defendant's exhibit 1. Leave that open and I will help you find it.

The Court: That is the Aylsworth patent?

Mr. Parker: This is the patent to Aylsworth, which
229 bears the No. 1,139,470.

The Witness: Yes.

By Mr. Parker:

Q. Now, in a broad sense, does not Aylsworth, in the paragraph that begins after line 40, teach us two steps, that is, heating, and then a coating operation? A. It does but—

Q. So far as the claim is concerned, it distinguishes from Aylsworth in the extent of the surface coating, in the sense that he wants superficial coatings, is that correct? A. Yes.

Q. Now, is this superficial coating in your mind the same as impregnation? A. Superficial heating and superficial coating, is not the same in my mind as impregnation.

Q. Now, in impregnation then, the coating compound—the coating composition, rather, enters into the surface pores of the wood, is that not correct? A. Yes, but for me, it is a question of how the depths of the penetration is, and if the lacquer comes in a—how should I explain it.

If it comes on the surface and the—a little on the
230 depths of the surface or if it comes to the depths.

Q. Then if I can go a little further, if it were just a surface coating, then in your mind you could just peel it off? A. No, you can't.

Q. You can't? A. No, you will have a linking between the materials—the surface of the material and the lacquer.

Q. So you would have some penetration? A. You would have a little penetration.

Q. That's right. Now, you distinguish the two, that is, coating versus impregnation by the depth of that penetration? A. I beg your pardon?

Q. By the depth of that. A. Yes.

Q. Now, is the pore structure in all grades of wood the same? A. No.

Q. So we have some that might have a very coarse pore structure, and then we might have some with the hard woods that would have a fine pore structure, is that right?

A. There will be some difference.

231 Q. There will be some difference? A. Yes.

Q. So there might be occasions, depended on the wood selected, that we would get a greater penetration than we would in other types of wood, would we not? A. That is all right but at the same way, we must consider that what is claimed in the Aylsworth patent is a drying out of the material. The two seem to belong to each other in Aylsworth.

Q. I am trying to limit it now just to the depth of the coating, and so we can try and get a distinction in our minds eye between the coating and the impregnation of the wood.

In some types of wood, those that perhaps have a porous structure, then even within your definition of coating, there could be some difference in the amount of penetration depending on the type of wood, is that correct? A. Yes.

Q. All right. Now, in the File Wrapper, page 1, I will ask you to take a look at that page.

I would ask you to read the paragraph beginning at the bottom of page 1 to yourself, if you will. A. Yes.

232 Q. Then continue on over to page 2 in that paragraph. Take just a moment, if you please, and read that. A. Yes. How far should I read?

Q. I would like you to read to line 12, and I am particularly interested in lines 7 through 12.

Mr. Kaul: On page two or page one?

The Witness: This continues to page 2.

Mr. Parker: Yes.

By Mr. Parker:

Q. Does not this tell us that some of the air on the cooling will be contracted in the pores of the wood itself, and that the coating will enter these pores and will remain in those pores after the coating operation? A. It is so.

Q. This is true? A. Yes.

Q. All right. Thank you. That takes care of that.

One final question: Would this not be impregnation in that case? A. This would be—

Q. In the question I just asked as a follow-up to that.

A. For me it will not be impregnation. For me it
233 will be coating.

The Court: It will be what?

The Witness: Coating.

By Mr. Parker:

Q. Even though it enters the pores of the wood? A. Yes.

Q. Very well. Thank you.

Now, turning back, if you will, to the claim for just a moment, and that appears on page 98 of the record.

Now, if we look at that on the one hand and exhibit—Paper A in Defendant's exhibit 1 on the other hand, and that is the patent to Aylsworth, No. 1,139,470. A. Yes.

Q. Again, a distinction here as to what is disclosed by Aylsworth and that which is recited in the claim is the fact that he heats for a time not exceeding 120 seconds, is that right? A. That is all right.

Q. That is in the claim of Mr. Levring. A. Yes.

Q. Aylsworth on the other hand heats for several hours?
A. Yes.

234 Q. Now, insofar as the claim is concerned, that length of time would be one second, two seconds on up to 120 seconds, can it not? A. Not exceeding 120 seconds, yes.

Q. Now, with that thought in mind, could we look, if you please, at exhibit E and this is—Paper E. I am sorry.

This is the patent to Taylor, and I would ask if you would turn to that, please. A. Yes.

Q. Now, I wish to ask two questions about this.

No. 1 relates to the length of time that Taylor heats, and referring now, if you please, to column 1, line 34, does Taylor tell us how long he heats? A. "The ends of the logs are then rapidly heated by a blast of hot dry air or by the application of a heated plate of iron for a few seconds of time or by any other suitable means to a temperature above the temperature of the liquid to be afterwards applied so that such liquid will readily penetrate and not become chilled by contact with the wood."

Q. That is far enough. How long does he heat? A. A short time.

235 Q. A few seconds? A. Yes.

Q. Is this within the time span of zero to 120 in your mind? A. It is.

Q. Now, does Taylor tell us what he heats? For the answer to that I would refer you to the first paragraph in the second column here and specifically to the sentence beginning in line 61, then heat is applied. A. Yes. "Then heat is applied to the surface of the wood either by a blast of hot air or by a hot plate passing over the"—

Q. That is far enough. Does he tell you what he heats? A. Yes.

Q. What does he heat? A. He heats the end of the wood.

Q. Does it say end there? A. No, the surface.

Q. He says surface of the wood, does he not? A. Yes.

Q. Now, turning, if you will, to the Gard patent, and this is Paper C, Defendant's exhibit 1. A. Yes.

236 Q. And again with reference to the time of heating, I would ask you to take a look at column 4, line 16. A. Line 16?

Q. That is correct of the Gard patent. A. "Usually about five to ten minutes time is required to remove substantially all the moisture from within a blank of the size mentioned utilizing the electronic oscillator referred to."

Q. That is far enough.

Does he tell you how long he heats? A. About five to ten minutes.

Q. Five to ten minutes? A. Yes.

Q. Now, for the answer as to what he heats, I would ask you to turn with me, if you please, to column 7. A. Column 7?

Q. That's right. A. Yes.

Q. And in column 7, the second paragraph, beginning with "generally", and I would ask does he not tell you that we can localize that heat? A. "Generally it is desirable to impregnate the whole of the article, but with the
237 present invention it is possible to localize the heating and impregnate only in those areas which have been heated. For example, local impregnation of end sections of wood is frequently desired, and this may be economically accomplished by the method of this invention."

Q. So he heats here what, the ends of the wood? A. Yes.

Q. What does the end of something mean to you? A. It means by using the—dielectrically heating the cross-section of the wood.

Q. I pass you now the pen and would ask if you would use this as an example, and point out to us what the end of the pen means to you. A. For instance, the part here.

(Indicating.)

Q. What about the— A. It could be treated in a way like this here by putting electrodes on both sides here.

(Indicating.)

Q. I am not asking that question. I am asking what does the end of that pen mean to you? A. The ends?

Q. The end. E-N-D. The end of the pen. A. Either this or this. (Indicating.)

238 Q. That is right. Thank you.

Mr. Parker: Pointing to the absolute end of the pen.

By Mr. Parker:

Q. Now, with these two teachings, that is, the teaching of what they heat, and the secondary references to Taylor and Gard, that is, the end or the surface, and with the teachings of the time elements, that is, a few seconds, am I to understand that you, as a person skilled in the art, would not be led to carry out those two steps? A. No, I would be misled if I did that.

Mr. Parker: That is all I have, Your Honor.

The Court: Is that all?

Mr. Kaul: No, I have a little bit of redirect here.

It seems we left a few things hanging here by taking things out of context.

The Court: I have not concluded that was so but—

Mr. Kaul: Let me read the words that were left out in the quotation and then we can discuss this.

Redirect Examination

By Mr. Kaul:

Q. Mr. Parker initially asked you about the pores.

239 The Court: What exhibit?

Mr. Kaul: I am now referring to Plaintiff's exhibit 1, the specifications which is on page 2.

The Court: All right.

Mr. Kaul: Line 7 and the first sentence in that.

By Mr. Kaul:

Q. Just read that. A. "If so the air in the pores of the surface"—

Q. That is far enough. It says the pores of the surface, doesn't it? A. It does.

Q. Is there a difference of the pores of the surface and the pores in the center of the wood? A. Yes, there is much difference.

Q. Could we call the pores of the surface—could we call them open pores? A. We can, yes.

Q. Would these be some how contrasted with the internal pores of the wood? A. No, they would too be the same.

Q. Would be the same? A. Yes.

240 Q. The same? A. They are built the same way but after the heating—

Q. I don't mean the structure. When we say the open pores on the surface, are these physically removed by a fine eye distance from the pores in the center of the wood? A. Yes, they are.

Q. So when we talk about impregnating the pores of the surface, does that correspond with your understanding of superficial heating and cooling? A. Yes, it does.

Q. Now, next I would like to refer you to Claim 9 on page 98. A. 98?

Q. Yes. And that claim doesn't only talk about heating for less than 120 seconds but doesn't it specify something else? A. "A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating said article for a period not exceeding 120 seconds to raise the surface temperature thereof to a temperature of between 120 and 350"—

Q. That is far enough.

241 He says he wants heating for less than 120 seconds for a purpose, doesn't he? A. Yes.

Q. What is that purpose? A. It is for—

Q. To raise the temperature? A. Yes.

Q. To a specified temperature range? A. Yes.

Q. Now, let me refer you over to defendant's exhibit 1 which has the Taylor and Gard patents in here and the Aylsworth patent, and you testified on all of these in answer to Mr. Parker's questions.

Now, you admitted to Mr. Parker that the Taylor patent mentions the words "a few seconds". Isn't that correct? A. It is.

Q. And that the Aylsworth patent mentioned several hours, isn't that correct? A. Yes.

Q. Now, do you believe, even at this point in the proceeding, that you could substitute the few seconds heating time of the Taylor patent for the several hours
242 heating time in the Aylsworth patent and still accomplish the purpose of the Aylsworth patent which is a thorough drying as he specifies in there? A. Oh, no, I couldn't.

Q. Could you in fact get a thorough drying in a few seconds? A. No, I couldn't.

Q. Could you get a thorough drying in less than 120 seconds? A. No, I couldn't.

Q. Now, let's refer to the Gard patent and would you open to that patent and Mr. Parker asked you about column 4, line 16, five to ten minutes time. A. Yes.

Q. Is required. A. Yes.

Q. What is it required to do, the five to ten minutes time? A. To remove substantially all the moisture from the blank.

Q. Now, does the Levring process want to remove
243 substantially all the moisture? A. No, if it did, we would not be interested in using it by us.

Q. Finally now, let me refer you over to column 7 in the Gard patent.

Mr. Parker asked you several questions about the ends of his pen. A. Yes.

Q. You don't find the word end alone in there, do you? Doesn't it specify end section? A. Yes, end section.

Q. Doesn't the end section mean something different than the end to you? A. It means something else than the surface of the ends.

Q. Would it suggest to you the section which could be sandwiched between the electrodes of the dielectric heater? A. I didn't understand your question.

Q. Would the term end section, as used here, suggest to you that section at the end of an article, the blank? A. No.

Q. Wait. I have not finished yet. That section at the end of the blank which could be sandwiched in between

the dielectric—the electrodes of the dielectric heater?

244 A. No.

The end section does not suggest that to you? A. The end section is not the end surface for me.

Q. Well, you have made that point clear. I want to know what end section does mean to you. A. Well, if I may make a drawing, I think I can better explain what I mean.

Q. Well, I don't know that—

The Court: I have no difficulty with it.

Mr. Kaul: All right, Your Honor.

I have no further questions of this witness.

The Court: Mr. Parker?

Mr. Parker: One question, Your Honor.

Recross Examination

By Mr. Parker:

Q. We are talking, if you please, Mr. Jensen, about thorough drying, and the time it would take to dry. A. Yes.

Q. Now, would this not depend upon what condition the wood comes to you in? A. Sure it would but usually when making a finish to wood, the wood will have a moisture content within certain limits.

245 Q. I still say would this not depend upon conditions that the wood comes to you in? A. A little.

Q. Now, if it comes to you 99 and 44-100 per cent dry, would it take as long to dry that as it would something that you received 75 per cent dry? A. If the wood comes to me at—I did not understand.

The Court: If the wood comes to you 99 per cent dry?

The Witness: No, it wouldn't.

By Mr. Parker:

Q. So even in the terms of the Aylsworth patent, if you received wood that had a moisture content of 99 per cent dry, then is it not possible that with modern heating techniques, you could dry this in just a few seconds? A. No, I don't think you could.

Q. You don't think so? A. No.

Q. But you are not sure? A. No, I can't say exactly. It is impossible to say.

Q. Now, can I carry on just a moment, please, to the surface of the wood as it relates to the pores of the wood.

246 Now, if I understand the process correctly, the only one that would receive the coating could be those pores that are exposed to the exterior? A. Yes.

Q. So in any process, the only ones that can, if I can use the expression, drink in the coating, would be those in a position to receive it? A. Yes.

Mr. Parker: That is all, Your Honor.

The Court: All right. Thank you very much.

Is that all, Gentlemen?

Mr. Kaul: Yes, that concludes the case for the Plaintiff, Your Honor.

Would you like us to make a closing statement?

The Court: I don't need any closing statement.

I am going to reserve on it. I will not attempt to resolve the matter today.

Mr. Kaul: May we file trial briefs?

The Court: I think you should in the circumstances. I think they would be very helpful.

Do you want a transcript?

Mr. Kaul: If we are going to file trial briefs, I
247 would like a transcript.

The Court: If you are going to get a transcript, I would like to have one, too.

Mr. Kaul: We will do that, Your Honor.

Mr. Parker: And the time for filing trial briefs?

The Court: Let me put it this way: The Court runs into a suspended operation next month. You may have all the time you want as far as I am concerned.

Mr. Kaul: Well, we will act with all reasonable speed. I presume it depends on how long it takes to get the transcript.

The Court: Yes, but what I mean is how much time do you want. The sooner I get them, the sooner I will decide it.

Mr. Kaul: 30 days after we get the transcript.

Mr. Parker: May I have 30 days to reply, Your Honor?

The Court: That is fine.

It was very well done and very well tried by both sides.

Mr. Kaul: Thank you.

The Court: Off the record.

(A discussion was held off the record)

(This record is certified by the undersigned to be the official transcript of the above-proceedings.)

/s/ Dawn T. Copeland

DAWN T. COPELAND

Official Court Reporter

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 20884

HELGE ERIK LEVRING, *Appellant*,

v.

EDWARD J. BRENNER, Commissioner of Patents, *Appellee*.

Stipulation as to Contents of Joint Appendix

Pursuant to Rule 16(c) of this Court, the parties to the above-entitled cause, through their attorneys, hereby stipulate that the following documents shall constitute the contents of the Joint Appendix to the Briefs:

1. Docket Entries
2. Complaint
3. Answer to Complaint
4. Transcript
5. Findings of Fact and Conclusions of Law
6. Opinion
7. Judgment
8. Notice of Appeal
9. Order Extending Time to File Record and Docket Appeal
10. Defendants' Exhibits:
 - A-E (Cited Patents)
 - F (Examiner's Answer)
 - G (Decision of Board of Appeals)
11. Plaintiff's Exhibit 1:
 - pp. 1-6, 96-99, 103, 104, 108, 112, 116-133

12. Plaintiff's Exhibit 2:

pp. 2-8 (Report)—Graph dated 5-21-66.

DONALD A. KAUL
Donald A. Kaul,
Attorney for Appellant

Dated: May 1, 1967

JOSEPH SCHIMMEL
Joseph Schimmel,
Attorney for Appellee

Dated: May 1, 1967

(Filed Nov. 10, 1966)

Findings of Fact

1. This is a civil action under 35 U.S.C. 145 in which the plaintiff seeks a judgment of this Court authorizing the defendant, Commissioner of Patents, to grant a patent containing claims 9, 10 and 11 of application, Serial No. 671,412, filed July 12, 1957 by Helge Erik Levring, the plaintiff herein.

2. Plaintiff's application relates to a method of applying coatings to the surfaces of porous material. As claimed, the method includes the steps of superficially heating a wooden article for a period of time not exceeding 120 seconds to raise the surface to a temperature of between 120° F. and 390° F. and immediately thereafter, applying to the surface of the article a lacquer finish. The time and intensity of the heating and the temperature are said to be such that upon application of the lacquer to the surface of the article, the surface temperature will immediately drop by at least 50° F.

3. The prior art relied upon by the defendant consist of:

(a) the patent to Aylsworth, No. 1,139,470 (Defendant's Exhibit 1, Paper A), which relates to a process

for coating wood and other porous substances with a varnish or enamel composition. In the Aylsworth process, the wood to be coated is (1) heated to a temperature of 220° or higher, then, while hot, it is (2) dipped in or coated with a cold solution of lacquer and immediately removed therefrom, (3) thereafter, it is dried by a baking operation at a lower temperature for a length of time depending on that required for the particular lacquer selected to dry;

(b) the patent to Taylor, No. 1,435,031 (Defendant's Exhibit 1, Paper E), which discloses a process of coating the surface of wood, in which the surface is heated by a hot blast of air for *a few seconds* to a temperature above the melting point of paraffin, immediately thereafter the wood is swabbed with hot paraffin and then cooled to harden the paraffin and prevent it from entering the wood too far.

(c) the patent to Gard, No. 2,631,109 (Defendant's Exhibit 1, Paper C) which relates to a method of impregnating wood and includes the steps of elevating the temperature of the wood to a temperature above 212° F. and impregnating it by immersing it in a thermoplastic impregnating bath which has a temperature at least 50° F. below that of the heated wood. Gard states (Col. 7, lines 17 to 24) that it is possible to *localize* the heating and impregnate only those areas that have been heated.

(d & e) the Carter and Hofmann patents (Defendant's Exhibit 1, Papers B and D, respectively) which show that it is a conventional practice in the coating art to subject a coated base to a blast of cool air.

4. Although plaintiff indicated in his trial testimony that a principal distinguishing feature of his method was the moisture balance of the wooden article, none of the claims at issue contain any such limitation, and the specification

does not describe this feature. The claims do not preclude the use of thoroughly dry wood as used in the Aylsworth and Gard processes.

5. Since porous material like wood would be impregnated to some extent by a lacquer applied thereto in the manner called for by plaintiff, the expression "coating" used by plaintiff does not differ from "impregnating" in this case.

6. The patent to Aylsworth shows that it is old in the art to preheat a wooden article to a temperature of 220° F., coat the article with a solution of heat hardenable varnish having a temperature less than that of the wood and reheating it to form an infusible coating and claims 9 and 11, therefore, distinguished over this patent only in the length of time of heating and the specific temperature drop of the surface of the article when coated.

7. The patent to Taylor teaches superficially heating a wooden article for a few seconds prior to coating the same.

8. The patent to Gard teaches that a temperature differential as large as possible and of at least 50° F. difference should exist between the wood and the coating.

9. It would be obvious for the worker of ordinary skill in the art to modify the process of the Aylsworth patent by superficially heating the wooden article for just a few seconds at a temperature high enough to insure a surface temperature drop of at least 50° F. upon application of the lacquer thereto.

10. To cool the lacquer by a blowing operation as recited in claim 10 would be an obvious modification of the Aylsworth process, in view of the teachings of Carter and Hofmann.

11. The differences between the subject matter of claims 9, 10 and 11 of the application in suit and the prior art are such that the subject matter as a whole would have

been obvious at the time the claimed subject matter was devised to a person having ordinary skill in the art of coating porous materials.

Conclusions of Law

1. Plaintiff is not entitled to a patent containing any of claims 9, 10 and 11 of application Serial No. 671,412 identified in paragraph 5 of the complaint.
2. The complaint should be dismissed.

MATTHEW F. MCGUIRE
Judge

(Filed Nov. 10, 1966)

Opinion

Donald A. Kaul, Esquire, and Herbert J. Jacobi, Esquire, attorneys for Plaintiff.

Joseph Schimmel, Esquire, Solicitor, United States Patent Office, attorney for Defendant; Lutrelle F. Parker, Esquire, of Counsel.

This is a civil action under 35 USC 145 in which the plaintiff seeks a judgment of the Court directing the defendant, the Commissioner of Patents, to grant a patent on an application that the Commissioner has rejected.

The claimed invention relates to a method or process of coating the surface of various porous materials such as wood, paper, cork and fibre, which includes the superficial preheating of the surface of the material in question to a temperature between 150° F. and 390° F. in from 10 seconds to 120 seconds, applying different types of coating materials such as nitro-cellulose lacquers or "varnish polymerizing lacquers", "melamine", "uria-modified

alkyd-resins", to the heated surface, the heating conditions selected being such so that upon application of the coating material the temperature of the surface will immediately drop by at least 50° F.

It is also provided that the hardening or the drying of a coated wooden surface may be accelerated by a blast of cool air if the surface is to be subsequently coated.

There are three claims involved, Nos. 9, 10, and 11, none of which were allowed, and of which No. 9 is the so-called basic claim:

"A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating said article for a period not exceeding 120 seconds to raise the surface temperature thereof to a temperature of between 120 degrees Fahrenheit and 390 degrees Fahrenheit, and immediately thereafter applying to the surface of said article a lacquer finish, the time and intensity of the heating and the temperature of which is selected so that upon the application of the lacquer to the surface of the article the temperature of the surface of the article will immediately drop by at least 50 degrees Fahrenheit." (T. p. 16)

The Patent Office rejected the claims on five references: Aylsworth, No. 1,139,470; Carter, No. 1,140,873; Gard, No. 2,631,109; Hofmann, No. 1,574,890; and Taylor, No. 1,435,031.

As has been said, Claim No. 9 is the basic claim, Claim No. 10 involves cooling air steps and depends on Claim No. 9, and Claim No. 11 is essentially the same as Claim No. 9 but adds the further step of re-heating.

The Court concludes in the circumstances and on the evidence that the results obtained by the plaintiff as set forth in the claims in question are the product of mere routinization, would be obvious to one reasonably skilled

in the art and as a consequence do not rise to the dignity of invention. *Graham et al. v. John Deere Co. of Kansas City et al.*, 383 U.S. 1, et seq., October Term, 1965. See generally *California Research Corporation, et al., v. Ladd*, 356 F. 2d 813 (1966), C.A.D.C. 1966.

Judgment for defendant. Complaint dismissed. Findings of fact and conclusions of law and order of judgment attached and filed herewith.

MATTHEW F. MCGUIRE
Matthew F. McGuire,
United States District Judge.

November 10, 1966

(Filed Nov. 10, 1966)

Judgment

This action came on to be heard at the last term and thereupon upon consideration thereof, it is this 10th day of November, 1966

ADJUDGED that the complaint be and it is hereby dismissed, with cost against plaintiff.

MATTHEW F. MCGUIRE
Judge

September 2, 1966

I hereby certify that two copies of the foregoing BRIEF FOR DEFENDANT, FINDINGS OF FACT, CONCLUSIONS OF LAW and JUDGMENT, were mailed today to Mr. Donald A. Kaul, Esquire, attorney for plaintiff, 970 National Press Building, Washington, D. C.

JOSEPH SCHIMMEL
Solicitor

Notice of Appeal

Notice is hereby given that Helge Erik Levring, Plaintiff above-named, hereby appeals to the United States Court of Appeals for the District of Columbia from the judgment entered in this Action on November 10, 1966.

Dated: January 6, 1967

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Order Extending Time to File Record and Docket Appeal

Plaintiff, Helge Erik Levring, having on the 6th day of January, 1967, filed its notice of appeal in the above-entitled cause, and having on the 9 day of February, 1967, filed a Stipulation by which the parties hereto agree to extend the time for filing the record on appeal and docketing said appeal until April 6, 1967.

IT IS HEREBY ORDERED, pursuant to Rule 73(g) of the Federal Rules of Civil Procedure, that the time within which the said Plaintiff-Appellant shall file the record on appeal and docket the appeal in the United States Court of Appeals for the District of Columbia is hereby extended to and including the 6th day of April, 1967.

United States District Judge

Dated: February 9, 1967

Defendant's Exhibit 1
Civil Action No. 2499-65

LEVRING

v.

BRENNER

A—Aylsworth 1,139,470

B—Carter 1,140,873

C—Gard 2,631,109

D—Hofmann 1,574,890

E—Taylor 1,435,031

F—Examiner's Answer

G—Decision by Board of Appeals

UNITED STATES PATENT OFFICE.

JONAS W. AYLSWORTH, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO CONDENSITE COMPANY OF AMERICA, OF GLEN RIDGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PROCESS FOR COATING POROUS SUBSTANCES.

1,139,470.

Specification of Letters Patent.

Patented May 18, 1915.

No Drawing.

Application filed April 10, 1912. Serial No. 689,841.

To all whom it may concern:

Be it known that I, JONAS W. AYL-
WORTH, a citizen of the United States, and
a resident of East Orange, in the county of
Essex and State of New Jersey, have in-
vented certain new and useful Improve-
ments in Processes for Coating Porous Sub-
stances, of which the following is a descrip-
tion.

My invention relates to processes for coat-
ing wood and other porous cellular or
fibrous substances with a varnish or enamel
composition, and my object is to produce an
improved process of this nature in such
manner that an improved coated article will
be uniformly produced thereby.

My process more especially relates to the
formation upon wood of a coating or veneer
formed of a hard infusible phenolic con-
densation product.

Ordinarily in processes of this character,
the wood is dipped into hot varnish, that is,
the wood is not heated before being dipped,
or the wood is not heated to a temperature
higher than that of the varnish. The coated
article is then baked and the air in the pores
of the wood is expanded by the heat of the
varnish and the subsequent heat of the bak-
ing, so that it forces its way out through
the coating to form blisters and mar the
surface of the coating. If a counteracting
pressure is used during the baking opera-
tion, an autoclave must be used, and fur-
thermore, since the vapor contents of the
wood and the varnish are thereby kept un-
der tension, the coating is likely to crack
or develop flaws subsequently. By my
process, which I will now describe, these
difficulties are obviated.

In its broadest aspects, the process con-
sists of the following steps: First, the sub-
stance to be coated is heated at a sufficient
temperature and for a sufficient length of
time to thoroughly dry the same and to ex-
pand the air and gases in the pores or in-
terstices of the substance. Next, the object,
before it has had a chance to cool, is dipped
in or coated with a cold solution or fluid
form of the varnish or coating composition
to be applied, or with a solution or composi-
tion which is heated somewhat, but which is
of a temperature less than that of the sub-
stance treated. The coated object is then
dried or baked at a temperature lower than
that at which the uncoated substance was

initially heated. By this process, the pores
or interstices of the substance are sealed
and filled up with the varnish composition
so that the substance cannot subsequently
take up moisture before subsequent coats are
applied and the air or vapors within the
pores are not expanded during the applica-
tion of the varnish and the baking thereof,
to cause defects in the coating.

As applied to wood structure, and the
phenolic condensation product varnish or
enamel which I prefer to use, the process is
specifically as follows: The wood is first
dried for several hours at 220° F. or higher,
preferably about 250° F., but not at a tem-
perature high enough to injure the wood.
Hard wood can be dried at the higher tem-
perature without injury but resinous woods
require a longer application at a lower tem-
perature until the resinous matters are well
dried out. Secondly, the wood, while hot, is
dipped in the enamel composition. The
coated object is then removed at once from
the enamel composition and is baked in an
ordinary oven at any temperature lower
than that at which the wood was dried.
The time of baking will depend upon the
temperature used or the nature of the
enamel and may vary from one to six hours.
The coating will harden by chemical re-
action to form an infusible, hard, coating.
The object can be rubbed and finished after
one coat, or subsequent coats may be ap-
plied, rubbing down between each applica-
tion and baking of the composition, if a
high finish is desired. As stated, the appli-
cation of the first coating in the manner
described, seals and fills up all of the pores
of the wood so that the latter cannot take
up moisture before subsequent coats are
applied.

The lacquer, varnish or enamel composi-
tion used, which I will refer to generically
as a varnish composition, preferably com-
prises a phenol or cresol resin, such as that
described in my Patent No. 1,020,593, grant-
ed February 19, 1912, but containing from
20 to 100 parts of free cresol or phenol and
a sufficient amount of liquid mono-chloro-
naphthalene to render the mass fluid at a
relatively low temperature, as room heat, or
at a slightly elevated temperature, up to
say 150° F. The added cresol or phenol
plus the mono-chloro-naphthalene together
should amount to about twice the weight of

the cresol or phenol resin used. The cresol or phenol resin referred to is a fusible phenol formaldehyde condensation product in which the formaldehyde is all combined with the phenol and which is preferably dehydrated at a temperature of approximately 400° F. if under normal pressure. In referring to the proportion of free phenol or cresol and mono-chloro-naphthalene to the phenol resin, I refer, for the purpose of the proportion, to a resin containing no uncombined phenol. Hexa-methylene-tetra-amin or tri-oxy-methylene or other solid anhydrous polymer of formaldehyde is also incorporated in the composition in a sufficient amount to harden the mass during the baking operation to a hard, infusible product. The amount of hardening agent is calculated by supplying the same in the proportion of three or four per cent. of the weight of the anhydrous phenol or cresol resin and an additional amount in a proportion of 20 to 25 per cent. of the weight of the free phenol or cresol. Various solid solvents or plasticity ingredients may also be incorporated in the mass when desired, for special purposes, as for example, phthalic or benzoic anhydrid, when a polymer of formaldehyde is the hardening agent used, tetra-chloro-phenol, when hexa-methylene-tetra-amin is the hardening agent used, etc.

In the above composition the liquid mono-chloro-naphthalene may be replaced by acetylene-tetra-chlorid, in the same proportions as given for the mono-chloro-naphthalene.

Solid chloro-naphthalenes are also desirable ingredients of the composition described, particularly when the same is made from cresol resin, in addition to the liquid mono-chloro-naphthalene or acetylene tetra-chlorid, since the solid chloro-naphthalenes reduce the coefficient of expansion of the varnish film after hardening. This coefficient is greater in the case of a composition made from cresol resin than one made from phenol resin, more particularly referred to in my Patent No. 1,020,593, above mentioned. In the hardened varnish film made from cresol resin and a hardening agent there is generally a tendency to "check" or form minute cracks, upon hardening, if the solid chloro-naphthalenes are not added to the ingredients. The solid chloro-naphthalenes counteract this tendency particularly the higher derivatives, as tetra- and hexa-chloro-naphthalenes. These substances may be used in varying percentages, and remain as valuable plasticity or solid solvent ingredients in the film.

With compositions such as those above described, the hardening reaction between the ingredients may readily be caused to ensue at a temperature of for example 205° to 215° F. It should be noted that these com-

positions contain no water or volatile solvents, such as are contained in the ordinary varnish.

It should be particularly noted in the process described that the coated article may be baked during the hardening of the varnish film in an ordinary oven, without the use of counteracting pressure. In prior processes in which the baking operation is conducted at a temperature higher than that at which the wood was dried, moisture contained in the structure of the wood, and not liberated at the temperature at which the wood was dried, is evolved, and escaping through the varnish coating, causes flaws therein. This is necessarily so whenever the baking is at a higher temperature than the drying, unless a counteracting pressure is used during the baking, in which case, as stated, the vapor contents of the wood and varnish, being kept under tension by the pressure, tend to force their way out subsequently and cause cracks.

While I consider the composition just described as best adapted for the purposes of my improved process, it is to be understood that my invention is not limited thereto, but may be practised with other varnish compositions in the nature of phenolic condensation products or otherwise.

Having now described my invention what I claim as new and desire to protect by Letters Patent is:

1. A process for coating wood consisting in drying the wood at a temperature and for a time sufficient to dry the same, without injury thereto, coating the same while hot with a phenolic varnish solution which is maintained at a temperature lower than that of the wood, and which requires heating to harden the same fully, by chemical reaction and then baking the coated article at a temperature lower than that at which the wood was dried, substantially as described.

2. A process for coating wood with a phenolic condensation product, consisting in drying the wood at a temperature higher than the reaction temperature of the said product, then coating the wood while hot with a fluid composition containing ingredients adapted upon heat treatment to react to form an infusible phenolic condensation product, which composition is maintained at a temperature less than that of the wood, and then heating the coated article at a pressure no greater than atmospheric and at a temperature less than that at which the wood was dried, but at a sufficient temperature and for a sufficient time to cause the desired reaction between the ingredients of the coating to render the said coating infusible, the said fluid composition being so chosen as to have the capability of being hardened to infusibility at a temperature less than that at which the wood treated was

dried, under atmospheric pressure, substantially as described.

3. A process for coating wood consisting in drying the wood for several hours at a temperature not lower than 220° F., but not high enough to injure the wood, then coating the wood while hot with a fluid composition containing ingredients adapted upon heat treatment to react to form an infusible hard phenolic condensation product, which composition is maintained at a temperature less than that of the wood, and then immediately baking the coated article at a temperature less than that at which the wood was dried, sufficiently to cause the desired reaction between the ingredients of the coating to render the said coating hard and infusible, substantially as described.

4. A process for coating fibrous or porous substances with a phenolic condensation product, consisting in heating the substance for several hours at a temperature higher than the reaction temperature of the said

product, then coating the substance while hot with a fluid composition having a temperature less than that of the substance treated, comprising a phenol resin, a methylene-containing hardening agent therefor, and a substance adapted to render the mass fluid at a relatively low temperature, and to constitute a desirable ingredient of the final product, and then immediately baking the coated article at atmospheric pressure and at a temperature less than that at which the substance was dried, but at a sufficient temperature and for a sufficient time to cause the desired reaction between the reacting ingredients of the coating to render the same hard and infusible, substantially as described.

This specification signed and witnessed this 8th day of April, 1912.

JONAS W. AYLSWORTH.

Witnesses:

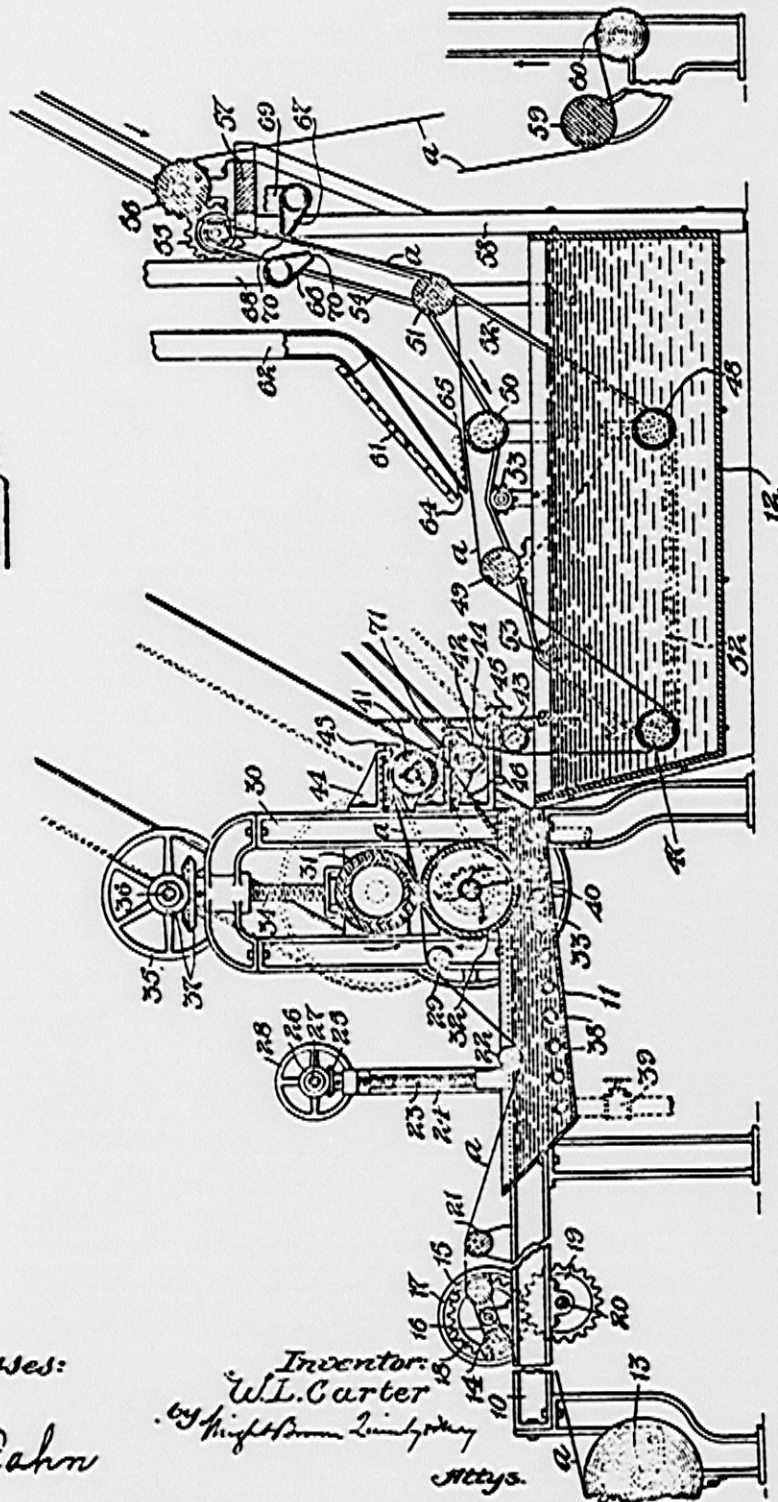
DYER SMITH,
HENRY SHELDON.

W. L. CARTER.
MACHINE AND METHOD FOR WAXING PAPER.
APPLICATION FILED DEC. 13, 1913.

Patented May 25, 1915.
2 SHEETS—SHEET 1.

1,140,873.

FIG. 1.



Witnesses:

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MACHINE AND METHOD FOR WAXING PAPER.
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2 SHEETS—SHEET 2.

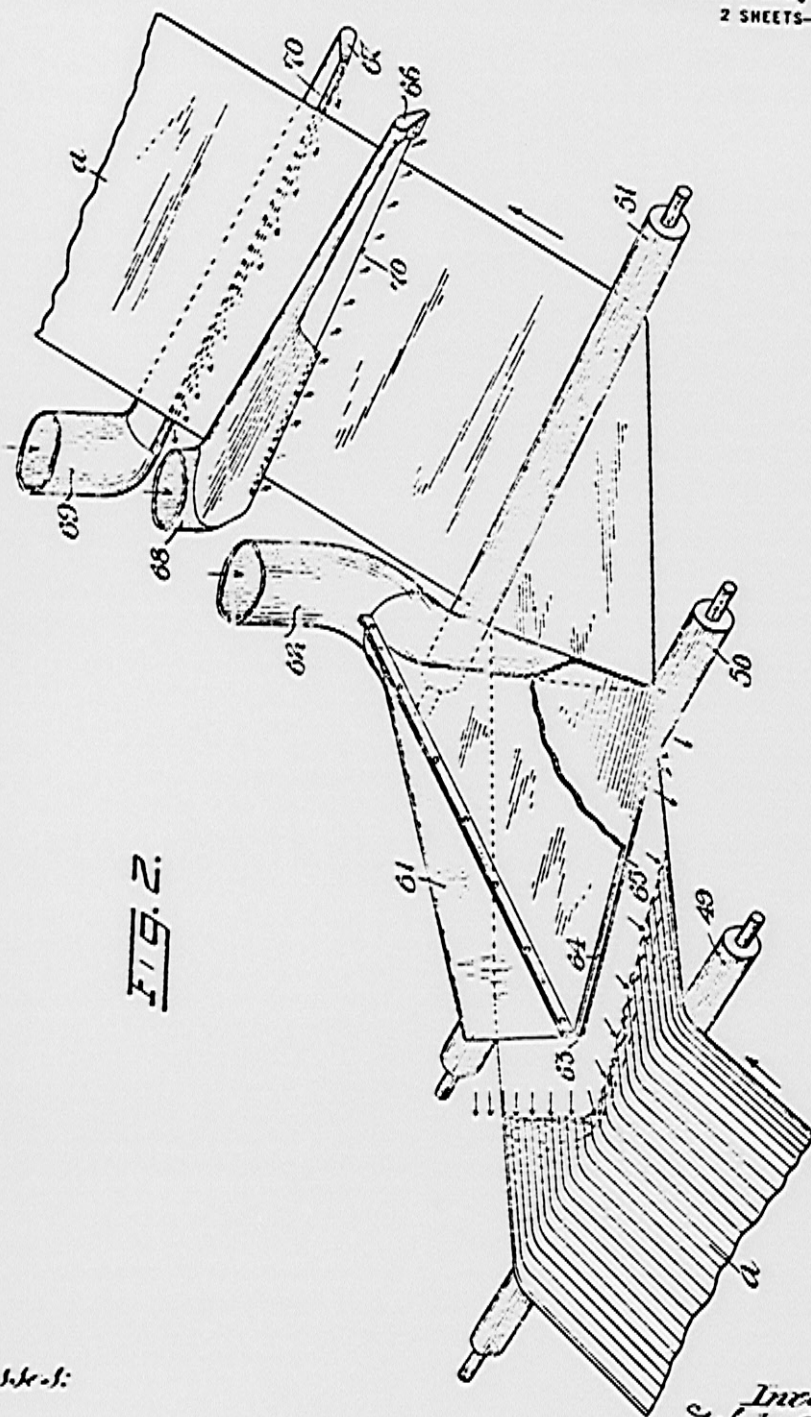


FIG. 2.

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UNITED STATES PATENT OFFICE.

WINTHROP L. CARTER, OF NASHUA, NEW HAMPSHIRE.

MACHINE AND METHOD FOR WAXING PAPER.

1,140,873.

Specification of Letters Patent.

Patented May 25, 1915.

Application filed December 13, 1913. Serial No. 806,430.

To all whom it may concern:

Be it known that I, WINTHROP L. CARTER, a citizen of the United States, and resident of Nashua, in the county of Hillsboro and State of New Hampshire, have invented certain new and useful Improvements in Machines and Methods for Waxing Paper, of which the following is a specification.

This invention relates to machines and methods for coating paper with wax, the particular kind of coating material I employ usually being paraffin, and the invention has particular reference to machines of this character which will enable either a thick or a thin coating to be applied with highly finished surfaces.

In carrying out my invention I provide means for running the web of paper first through a bath of melted paraffin wax, then ironing or smoothing the coating, then running the paper through a cold water bath to harden the coating, removing the water by a blast of cool air, and then drying and reeling up the web of paper.

The invention consists in the improvements which I shall now proceed to describe and claim.

Of the accompanying drawings: Figure 1 is a longitudinal sectional representation of a machine embodying my improvements; Fig. 2 is a perspective view of the air delivering nozzles and the rolls in contact with which the paper web runs after leaving the water bath.

Referring first to Fig. 1, a suitable frame 10 is provided, said frame supporting a paraffin tray 11 and a water tank 12. At one end of the frame are bearings for a shaft or spindle 13 for the supply roll of paper *a*. From the supply roll the paper is led under a roll 14 and over a roll 15, the object of said rolls being to smooth out the paper and hold the web under proper tension. The rolls 14, 15, are carried by a frame 16 mounted to be adjusted on trunnions by a hand wheel 17. At one end the frame is connected to a toothed segment 18 meshing with a toothed segment 19 at one end of a shaft 20. It is to be understood that at the other end of the shaft 20 is another segment 19 meshing with a segment connected to the other end of the adjustable frame 16, in order that when the hand wheel 17 is rotated it will rock both ends of the frame 16

so that the rolls 14, 15, may be properly adjusted in parallelism. From the roll 15 the paper leads over a guide roll 21 and then under an adjustable guide roll 22, which is held at the proper point below the level of the melted paraffin in the tank 11 by means of a screw 23 mounted in a post 24 at each side of the machine. The upper end of each screw carries a bevel gear 25 meshing with a bevel gear 26 on a shaft 27 having a hand wheel 28 by means of which the guide roll 22 may be adjusted vertically to vary the length of the paper that is immersed in the melted paraffin. It will be readily understood that by adjusting the roll 22 to a lower position than indicated in Fig. 1, the length of paper that is immersed, when the surface of the paraffin is at a given level, will be increased. From the roll 22 the web of paper *a* leads over a guide roll 29 mounted in a frame bracket 30, which latter is provided with bearings for upper and lower rolls 31, 32 respectively. Preferably the lower roll 32 has a covering 33 such as a blanket jacket. The bearings of the upper roll 31 are adjusted by means of a screw at each end, one of which is shown at 34 in Fig. 1. The space between the rolls 31, 32, may be varied by means of a hand wheel 35 carried by a shaft 36 having bevel gearing 37 with the screws 34. Suitable pipes 38 in the bottom of the paraffin tank 11, supplied by steam under the control of the valve 39, provide for keeping the paraffin in melted condition. The roll 33 is hollow and is provided with suitable means for heating it, as by a steam inlet indicated at 40. From the nip of the rolls 31, 32, the web of paper passes over hollow heated smoothing or ironing rolls 41, 42, 43, which are carried by brackets 44, the bearings of the rolls being laterally adjustable as by means of screw shafts having hand wheels 45. These rolls are preferably heated as by providing for the admission of steam to them or through them, in a manner similar to the provision for heating the roll 32. Preferably the roll 41 is of steel and the rolls 42, 43, are of brass, the latter metal being found to produce a better ironing effect upon the coating. As indicated by the arrows in Fig. 1, the direction of rotation of the ironing rolls 42, 43, is such that the peripheries of said rolls move in a direction

opposite to the direction of travel of the paper web *a*. As is clearly indicated in Fig. 1, adjustment of the rolls 41, 42 and 43, particularly the latter two, relatively to each other, the ironing or smoothing pressure upon the opposite surfaces of the web of paper may be varied according to the amount of deflection that is imparted to the web, this amount of deflection being also varied as required according to the tension on the entire web. To provide for the return to the tank 11 of the wax that may escape or be removed from the web before reaching the rolls 42, 43, I provide an inclined drip shelf 46. From the roll 43 the web passes under a roll 47 mounted in suitable bearings in the water tank 12, any suitable means being provided for keeping the water in said tank at the proper level. Preferably I provide a second submerged roll 48. Rolls 49, 50 and 51 are mounted in suitable bearings above the tank 12. The shafts of all of the rolls 47 to 51 inclusive are provided with sprocket wheels with which an endless sprocket chain 52 meshes, idle sprockets 53 being mounted where necessary to direct the chain 52 in the proper path of travel to insure rotation of all of the rolls 47 to 51 inclusive preferably at the same surface speed of rotation. All these rolls are driven by means of a chain 54 connecting the shaft of roll 51 with an upper shaft having a gear 55 meshing with a gear upon roll 56, the shaft of which is driven by any suitable means such as a belt. The roll 56 is mounted upon a bracket 57 supported by an upright 58.

The rolls 31, 32, and the rolls 41, 42 and 43 are driven in the direction indicated by the arrows in Fig. 1, either by any suitable gearing or by belting. In Fig. 1 the web of paper *a* is shown as passing under the roll 47, then over the rolls 49 and 50, then under the roll 51 and over the roll 56 and under a suitably supported guide roll 59 to the winding reel 60, which is rotated by any suitable means such as a belt. If it be desired to continue the immersion of the paper in the water for a greater length of time during this travel, the web instead of passing directly from roll 47 to roll 49 may be led around the roll 48 so that the web is immersed in the form of a loop, as indicated by dotted lines in Fig. 1. To obtain the best results it is essential that the water shall be removed from the paper as quickly as possible after it leaves the water bath, and this is done by blowing the water from the middle of the web toward and off from its edges. To effect this result I provide an air nozzle 61 (see Figs. 1 and 2) which is supplied with cold or cool air through a trunk 62 leading from a blower not shown. The delivery edge of the nozzle 61 is tapering, having its apex 63 just

above the mid-width of the paper web, the delivery slot 64 being continuous. By comparing Figs. 1 and 2 it will be seen that the lower edge 65 of the nozzle is in a substantially horizontal plane, although the nozzle as a whole inclines downwardly and has a tapering formation where the slot 64 delivers the air. Preferably the roll 50 is somewhat higher than the roll 49 so that the stretch of paper that receives the blast of air from the nozzle 61 is inclined. It is important, of course, that the direction of the blast shall be rearwardly relatively to the direction of travel of the paper in order to obtain the effect illustrated in Fig. 2. The result of the structure and mounting of the nozzle 61 as shown and described is that the blast of air is delivered so as to have a spreading or plow-like action upon the globules of water that are adhering to the web of paper, to force them rearwardly and laterally and off from the edges. In other words, the water is parted at the middle of the web and forced aside so as to be blown toward and off from the edges of the web. Usually there is a greater amount of water adhering to the upper surface of the web than to the lower surface. Such as adheres to the under surface is largely shaken off and drops back into the tank 12, this action being partially due to the speed of travel of the paper causing it to vibrate to some extent, and also due to the pulsating effect of the blast of air, the blower employed being preferably of a type which causes the air to pulsate. From the roll 50 the web of paper, freed from all but a slight dampness, passes under the roll 50 and then upwardly over the roll 56. While so passing it is subjected to the action of drying blasts of air directed against its opposite surfaces by means of nozzles 66, 67, connected by trunks 68, 69, with either the same blower as that which supplies air to the nozzle 61 or with another blower. Of course in practice the air employed is rendered as dry as possible before discharge through the slits 70 of the nozzles. To prevent the water blown from the web by the nozzle 61 from being driven against the still heated coating as the paper is passing toward and into the water bath, I provide a deflector such as indicated at 71 in Fig. 1.

The machine is rapid and continuous in its operation, and has all necessary parts so adjustable as to provide for any desired thickness or heaviness of coating applied to the paper, the web passing into the water bath in a highly finished condition, which condition is rendered permanent by the immediate action of the cold water upon the coating, the water being then so quickly removed from the surface that it can have no spotting effect upon the coating. If the

water is not removed quickly by such means as the nozzle 61, as above described, the paper is liable to have a mottled appearance.

Having described my invention, I claim:

5 1. A machine for making waxed paper, comprising a receptacle for heated wax, a water receptacle, means for guiding the paper through said receptacles, and means for subjecting the paper to the spreading
10 action of a fan-like blast of air to remove water from the paper after it leaves the water receptacle.

2. A machine for making waxed paper, comprising a receptacle for heated wax, a
15 water receptacle, means for guiding the paper through said receptacles, and means for subjecting the paper, after it leaves the water receptacle, to a spreading blast of air directed to the middle of the paper and
20 backwardly relatively to the direction of travel of the paper.

3. A machine for making waxed paper, comprising a receptacle for heated wax, a water receptacle, means for guiding the
25 paper through said receptacles, and means for simultaneously subjecting the paper, after it leaves the water receptacle, to agitation and a globule-removing blast of air in a direction opposite to the travel of the
30 paper.

4. A machine for making waxed paper, comprising a receptacle for heated wax, a water receptacle, means for guiding the
35 paper through said receptacles, means for subjecting the paper, after it leaves the water receptacle, to a blast of air to remove particles of water from the paper, and means for finally subjecting the paper to the
40 action of blasts of air to dry the coating in a direction opposite to the travel of the paper.

5. A machine for making waxed paper, comprising a receptacle for heated wax, a
45 water receptacle, means for guiding the paper through said receptacles, means for subjecting the paper to the action of a blast of air in a direction opposite to the travel of the paper, and a barrier for preventing
50 water blown off from the paper from being driven against the paper on its way from one receptacle to the other.

6. A machine for making waxed paper, comprising a receptacle for heated wax, a
55 water receptacle, means for guiding the paper through said receptacles, means interposed between said receptacles for ironing the coated paper as it passes from one to the other, and means for subjecting the paper,

after it leaves the water receptacle, to the action of a blast of air in a direction oppo- 60 site to the travel of the paper.

7. A machine for making waxed paper, comprising a receptacle for heated wax, a water receptacle, means for guiding the pa-
65 per through said receptacles, rolls interposed between said receptacles, means for heating said rolls, and means for rotating said rolls to cause their surfaces to travel in a direction opposite to the direction of travel
70 of the paper.

8. A machine for making waxed paper, comprising a receptacle for heated wax, a water receptacle, means for guiding the pa-
75 per through said receptacles, and means for varying the length of the stretch of paper immersed in each of said receptacles, and means for blowing the water from the paper
after it leaves the water receptacle.

9. A machine for making waxed paper, comprising a receptacle for heated wax, a
80 water receptacle, means for guiding the paper through said receptacles, and means for blowing the water from the paper, said means comprising a nozzle having a wide
85 delivery portion, said delivery portion being angular with the apex of its angle at the center, connections being provided whereby the nozzle may be supplied with air under
pressure.

10. A machine for making waxed paper, 90 comprising a receptacle for heated wax, a water receptacle, means for guiding the paper through said receptacles, means for blowing the water from the paper, said
95 means comprising a nozzle having a wide delivery portion, said delivery portion being angular with the apex of its angle at the center, connections being provided whereby the nozzle may be supplied with air under
100 pressure, and air delivery nozzles on opposite sides of the path of the paper after it passes the first mentioned nozzle.

11. The method of making waxed paper consisting in causing the paper to travel in
105 the direction of its length, first through a bath of heated wax and then through a water bath, and subjecting the paper, after it leaves the water bath, to the action of a blast of air in a direction opposite the direc-
110 tion of movement of the paper.

In testimony whereof I have affixed my signature, in presence of two witnesses.

WINTHROP L. CARTER.

Witnesses:

R. J. HOLZ,
GUY KELLY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

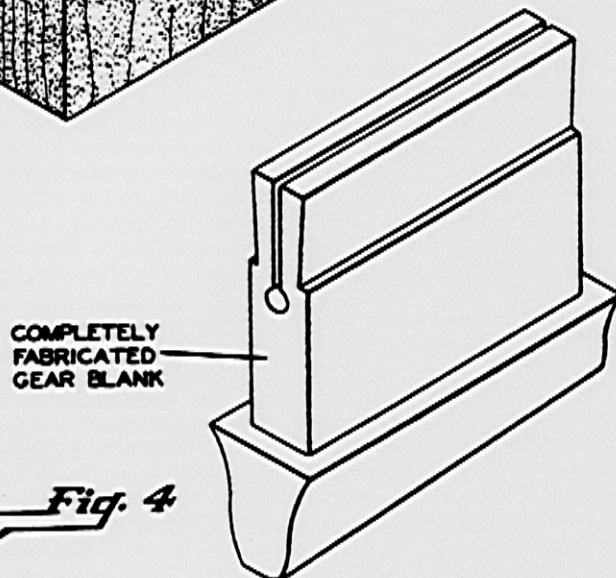
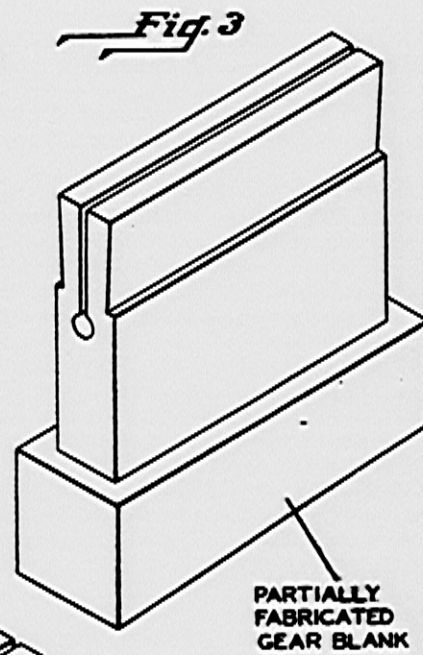
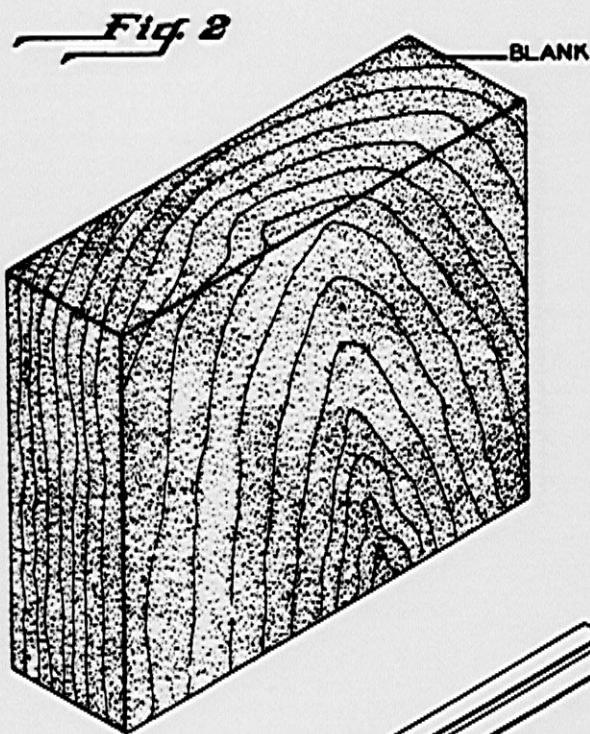
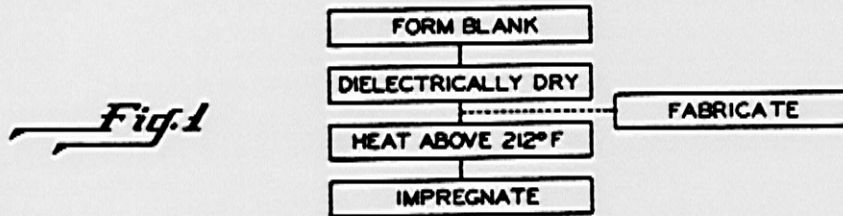
March 10, 1953

G. E. GARD

2,631,109

METHOD OF IMPREGNATING WOOD

Filed Dec. 8, 1948



Inventor
GEORGE E. GARD

by
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Patented Mar. 10, 1953

2,631,109

UNITED STATES PATENT OFFICE

2,631,109

METHOD OF IMPREGNATING WOOD

George E. Gard, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa., a corporation of Pennsylvania

Application December 8, 1948, Serial No. 64,151

10 Claims. (Cl. 117-59)

1

This invention relates to a method of impregnating wood and is concerned more particularly with a method of impregnating wood with an impregnant subsequent to removal of water from the wood until its water content is essentially zero.

In the manufacture of articles of wood, it is frequently desirable to impregnate the wood to eliminate dimensional changes which normally occur through the loss or gain of moisture in the wood, and also to preserve and protect the wood against deterioration. For example, in the manufacture of nonsparking gears, such as are frequently used in the cork grinding industry, wooden gear teeth are employed. The teeth are mounted in a metal frame and considerable difficulty has been experienced because of the dimensional instability of the wood, loss of moisture and concomitant shrinkage causing the teeth to become loose, resulting in excessive wear and damage to the teeth. Warping of the teeth has also been encountered as well as other difficulties which arise because of dimensional changes in the gear teeth.

In the manufacture of cork composition and the like by high frequency dielectric heating, it is desirable to provide a mold in which the cork composition can be confined during heating. Wood is properly suited for this purpose, provided the moisture can be removed from the wood and replaced with a material which will remain within the pores of the wood under the conditions encountered in use. It is essential that no substantial checking of the wood grain occur either in preparation or in use. The wood must be subject to no substantial dimensional change in use since such dimensional change might introduce cracks in the mold which would be undesirable from the standpoint of the application of a high frequency voltage. The molds must be capable of withstanding continued reheating without substantial dimensional change. Since the rate of dielectric heating and voltage insulating value of the mold will vary drastically with any change in the moisture content of the wood, it is essential that a constant level of water content be maintained and this should be essentially zero for best operating results.

There are many other industrial applications of wood where permanent resistance to dimensional change or resistance to deterioration or both are important considerations. The present invention is directed to the problem of rendering wood substantially proof against dimensional change by a method which is economically prac-

2

ticable, relatively inexpensive, and operable without deleterious effect on the wood.

A more specific object of the invention is to provide a method of impregnating wood by which the pores of the wood may be impregnated substantially throughout the entire extent of the body of the wood, leaving no space within the body for moisture.

Another object of the invention is to provide a method of wood impregnation which may be economically effected without any substantial splitting or checking of the wood, even though the wood to be treated contains substantial quantities of water prior to impregnation.

A further object of the invention is to provide a method of wood impregnation in which water is removed from a blank of regular geometry without deleterious action on the blank which would militate against subsequent fabrication operations and impregnation is effected either subsequent to fabrication or immediately after water removal.

An additional object of the invention is to provide a method of impregnation which will not require the usual pressure or vacuum systems but which will provide for substantially complete impregnation of the wood.

A still further object of the invention is to provide a method by which substantially complete impregnation at atmospheric pressure may be achieved in a relatively short period of time.

One of the most common methods of impregnating wood is to immerse air or kiln-dried wood in a suitable impregnating bath disposed within a container and then apply pressure to the bath and the wood in the container to force the impregnant into the pores of the wood. This is a relatively slow process and one which is not always effective for securing sufficiently complete impregnation to insure against dimensional change in the impregnated wood and eliminate the possibility of moisture gain which is objectionable, as mentioned above. Vacuum processes of wood impregnation have also been used as well as combination pressure and vacuum processes, performed as alternate pressure application and vacuum creation. These processes have not been completely successful in accomplishing full impregnation and they are, of course, relatively expensive, both in the cost of necessary equipment and in operating expense.

According to the present invention, the wood to be impregnated is first subjected to a high frequency electrical field to heat the wood by the dielectric effect to remove moisture from the wood

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until it has an essentially zero water content, and the temperature of the wood is then elevated to a degree above the boiling point of water but below the charring temperature of the wood. By heating the wood dielectrically, two important advantages are derived over conventional drying methods. First, it is possible to rapidly completely dry the wood by a substantially uniform generation of heat at an extremely low temperature, compared with normal commercial practice, and thus eliminate end grain checking and cracking, even though the wood initially contains an extremely large amount of water. Second, by dielectric heating it is possible to deliver the wood to the impregnating bath at a substantially uniform temperature throughout; whereas, with ordinary drying methods, the outer portions of the wood are heated to a higher degree than the inner portions. By having the interior of the wood at least as high as the exterior and possibly somewhat higher due to heat losses from the surfaces during and subsequent to drying, an unusually effective "vacuum" action is obtained without evacuating equipment when, as a subsequent step in the process of the present invention, the heated wood is immersed at normal atmospheric pressure in an impregnating bath the temperature of which is substantially lower than the temperature of the wood.

In the attached drawing:

Figure 1 is a flow diagram indicating a preferred sequence of steps to be performed in carrying out the method of this invention;

Figure 2 is a perspective view of a wood blank of the type used in the fabrication of a gear tooth;

Figure 3 is a perspective view illustrating a partially fabricated gear tooth; and

Figure 4 is a perspective view illustrating a completed gear tooth, ready for assembly in a supporting metal frame.

Appropriate notations have been applied to the various items shown in the drawing.

A method of impregnating a blank for the formation of a gear tooth will be described as typical of the present invention, but it will be understood that the invention is not limited to any particular size or shape of blank or article, the method being one of general application.

In the manufacture of a gear tooth, a blank of air or kiln-dried hard maple wood may be used, although relatively green wood containing a large quantity of moisture may be treated, if desired. Air-dried or kiln-dried wood normally contains in the order of 10% of water and green wood may contain as much as 25% or more of water. Preferably, the blank is of regular geometry, such as a rectangular piece in which the length, width, and thickness are each uniform throughout. This facilitates uniform heating for water removal, as will be more fully discussed. A gear tooth blank 2" thick by 7" wide by 6" long will be considered typical.

The blank is placed between electrodes connected to a source of high frequency power such as a conventional electronic oscillator delivering a frequency of 10 megacycles and a voltage of about 1 kilovolt per inch of thickness of the blank disposed between the electrodes. The power applied is so adjusted that the temperature of the blank is elevated to about 210° F. There is a dissipation of vapor from within the wood as this heating continues. Heat is generated substantially uniformly throughout the extent of the blank by subjecting the blank to the high fre-

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quency field; and, as a result, rapid dissipation of water from the wood is effected at a low temperature as compared with usual wood drying where superheated steam is generally used and where, due to the combined effect of the non-uniformity of the heating and the high temperature application, objectionable edge checking and cracking occur and complete water removal is difficult to achieve. Water removal should be accomplished as soon after the blank has been formed as possible, particularly where green wood is used, for there is a tendency for the wood to end check after cutting where moisture is permitted to leave the blank adjacent the freshly cut surfaces.

Usually about five to ten minutes' time is required to remove substantially all the moisture from within a blank of the size mentioned utilizing the electronic oscillator referred to. In some instances, longer periods of time may be required depending upon the type of wood, the size of the blank, its moisture content, the initial temperature of the blank, and other variable factors. The application of the high frequency field to the blank is continued until the water content has been reduced to essentially zero. There may be some water chemically bound in the cellulosic structure of the material, but reference is made to the water disposed within the mass, essentially within and between the fibers, as the term "water content" is generally recognized in the lumber industry. By "essentially zero" there is contemplated a moisture content of not more than 2% and generally less than 1% and more frequently a bone dry condition, insofar as this is physically possible.

After the wood has had its water content reduced to essentially zero, the dielectrical heating is preferably continued at a higher voltage, 2 kilovolts per inch of thickness in the blank under consideration, and the temperature of the wood is raised above the boiling point of water. The temperature to which the wood is elevated will depend to a large extent upon the particular saturant to be employed as well as the type of wood, the size of the blank, and other variable factors. The wood temperature should in all events be higher than the temperature of the impregnant and should preferably be at as high a temperature as can be safely and economically attained. As a general rule, it may be stated that the working range for the temperature of the wood will lie between 212° F., the boiling point of water, and the charring temperature for the particular wood employed. The range normally used will be between 250° F. and 350° F. and optimum results will be obtained with most woods when the temperature is between 275° F. and 325° F. In the specific example under consideration, the temperature of the maple blank may be raised to 300° F.

The frequency of the source of high frequency power will vary depending primarily upon the geometry of the load and the heating rate desired. Frequencies between approximately .5 megacycle and 40 megacycles are preferred. The voltage gradient or watt density used in heating the wood will be dependent upon the type of wood, open or tight grain, and the grain length, as well as other variable factors. The rate of heating should be such that the development of excessive pressures and explosions of the wood fiber are avoided. As mentioned above, gear teeth blanks of hard maple about 2" x 7" x 6" were heated successfully with a voltage gradient of 1

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kilovolt per inch of thickness during drying, elevated to 2 kilovolts per inch after drying.

The wood blank substantially completely freed of water and while at an elevated temperature is immersed in an impregnating bath which is to fill the pores of the wood and thus prevent the wood from taking on any moisture. Where thermoplastic impregnants are used, the temperature of the impregnating bath should, of course, be sufficiently high to melt the impregnant and render it sufficiently fluid that it will be capable of penetrating the wood to the desired extent. Where liquid impregnants are used they may be at room temperature. The general rule is to have the temperature of the saturant as low as possible and the wood temperature as high as possible, both consistent with limitations imposed by safety and sound commercial practice, for the utmost advantage in rapid and complete penetration of the impregnant is achieved when the temperature differential between the wood and the impregnant is at its maximum. A temperature differential of at least 50° F. should exist for economical commercial practice with most woods and usual impregnants.

By having the wood at a higher temperature than the temperature of the impregnating bath, there is a "vacuum" action created upon the cooling of the wood within the bath, and since the temperature of the interior of the wood is at least as high as that of the exterior and preferably higher, as the wood cools down from the outside toward the center of the piece impregnant is drawn into the body, completely filling the pore space in the wood, throughout the whole body.

In making a gear tooth, it has been found that ceresin wax forms an ideal impregnant, for it not only preserves and protects the wood against deterioration and dimensional change, but it also serves as a lubricant at the surface of the finished tooth. When ceresin wax is used, it is melted, and the heated blank is immersed in the melted impregnating bath. Ceresin wax having a melting point of 160° F. heated to 170° F. will be found to rapidly and effectively penetrate a maple blank of the dimensions given above, heated to 300° F. at the time of immersion, in a period of thirty to sixty minutes, during which time the wood will absorb 25% of its weight of the ceresin wax. The quantity absorbed will vary with different woods as well as different impregnants. Generally 15% by weight based on the weight of the dry wood will be a minimum for close-grained woods.

Subsequent to impregnation, the blanks are removed from the impregnating bath, wiped free of excess impregnant, and are then ready for fabrication.

Observations which have been made of wood blanks treated in accordance with the foregoing method, as well as dielectric measurements which have been taken, show no measurable absorption of water by the treated pieces, and no measurable dimensional changes have occurred in articles fabricated from blanks treated in accordance with the invention.

In the manufacture of a mold wall for the dielectric heating of cork compositions, blanks of maple wood 3" thick by 11" wide by 18" long were treated. The high frequency oscillator delivered a frequency of 10 megacycles and the initial voltage gradient or watt density was .5 kilovolt per inch of thickness which was continued until drying was effected and was increased to

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1 kilovolt per inch of thickness for the subsequent heating to about 300° F. A shrinkage of ¼ of an inch in an 11-inch width or across the grain direction was noted, and a slight warpage resulting from stress relief in the blank was observed, approximating a ¼ inch displacement in the center of the 11-inch width. No substantial checking was noted and the warpage was, of course, so slight that it was merely necessary to slightly increase the nominal dimensions of the blank prior to treatment. The blanks were approximately ¼ inch greater than the over-all dimensions of the final panels. If minor warpage of the work piece during water removal is a factor of any considerable importance, the work piece may be placed under pressure between the electrodes during the drying process. This will tend to reduce or eliminate all warpage, although generally there will be some minor deformation of the blank upon removal from the press due largely to the release of stresses within the body of the blank.

It is preferred to dielectrically heat wood blanks of regular geometry (such a blank has been illustrated in Figure 2), for this makes possible the use of conventional dielectric heating equipment without any special precautions to prevent undesired overheating in certain areas of the blank which might occur if the pieces were not of the regular contour and such irregularity was not taken into account in the design of the electrodes. Irregularly shaped blanks may be treated in accordance with the invention, however, and it is also within the scope of the invention to treat finished or partially completed articles. Where the cost of the impregnant is a major factor, it has been found possible to practice the invention in this order: form the blank, subject the blank to the high frequency electrical field to reduce the water content to essentially zero, then fabricate the blank to an article of substantially the desired final shape (as shown in Figure 3); reheat the blank, preferably by the dielectric effect, to a temperature above the temperature of the impregnant but below the charring temperature of the wood, and then impregnate. Any final finishing operations which may be necessary can then be effected. Figure 4 shows a completed gear tooth finished from the fabricated blank of Figure 2. Where minor warpage is not objectionable or can be conveniently obviated by pressure application, the process may be carried out on completely finished articles.

While it is preferred to utilize the dielectric effect for elevating the temperature of the blank to the desired degree subsequent to drying, this is not essential, for a blank which has been dielectrically dried may be heated in an oven, for example, and then impregnated. In most instances, however, the preferred practice will be to dielectrically dry, then continue the application of the high frequency field to elevate the temperature of the blank to the desired degree and immediately immerse in the impregnating bath.

The invention is not limited to any particular wood but is applicable to fibrous materials of various sorts in which the attainment of dimensional stability is a problem and is particularly useful where it is necessary to secure substantially complete filling of the voids within the fibrous material by an impregnating agent, as in the case of mold walls for dielectric heating where, as mentioned above, the presence of mois-

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ture affects the rate of dielectric heating and the voltage insulating value of the mold wall.

While in the typical example reference has been made to ceresin wax as an impregnant, other materials may be used. Where complete filling of the void space is desired, a melted impregnant is generally preferred, but for other uses solvent types of impregnants may be substituted. Synthetic resinous impregnants, such as phenol aldehyde resin in which water or alcohol may be employed as the solvent, depending upon the stage of polymerization of the resin, are typical of the solvent type of impregnants. With this latter type of impregnant, it may be maintained at about room temperature at the time of immersion of the blanks to be treated.

Generally it is desirable to impregnate the whole of the article, but with the present invention it is possible to localize the heating and impregnate only in those areas which have been heated. For example, local impregnation of end sections of wood is frequently desired, and this may be economically accomplished by the method of this invention.

While I have illustrated and described certain preferred embodiments of my invention, it will be understood the same is not limited thereto but may be otherwise embodied and practiced within the scope of the following claims.

I claim:

1. In a method of impregnating wood with an impregnant, the steps comprising subjecting the wood to a high frequency electrical field to heat the wood by the dielectric effect to a temperature below about 212° F. until its water content has been reduced to essentially zero, heating said wood to a temperature substantially above 212° F. and immersing said wood heated to a temperature substantially above 212° F. and at essentially zero content of water in a bath of impregnating material the temperature of which is at least 50° F. lower than the temperature of the wood.

2. In a method of impregnating wood with a thermoplastic material, the steps comprising subjecting the wood to a high frequency electrical field to heat the wood by the dielectric effect to a temperature below about 212° F. until its water content has been reduced to essentially zero, heating the wood to a temperature substantially above 212° F. and below its charring temperature, and immersing said wood while so heated in a bath of thermoplastic impregnant heated to a temperature above the melting point of the impregnant but at least 50° F. lower than the temperature of the wood.

3. In a method of impregnating wood with a thermoplastic material, the steps comprising subjecting the wood to a high frequency electrical field to heat the wood by the dielectric effect to a temperature below about 212° F. until the water content of the wood has been reduced to essentially zero, thereafter raising the temperature of the wood to between 250° F. and 350° F., and immersing said wood while so heated in a melted bath of thermoplastic impregnating material heated to a temperature above its melting point but below 250° F.

4. In a method of impregnating wood with a thermoplastic material, the steps comprising subjecting the wood to a high frequency electrical field to heat the wood by the dielectric effect to a temperature below about 212° F. until its moisture content has been reduced to essentially zero, heating said wood to a temperature of about 300° F., and immersing said wood heated to a

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temperature of about 300° F. in a bath of melted waxlike material heated to a temperature of about 170° F.

5. In a method of impregnating maple wood with a thermoplastic material, the steps comprising subjecting the wood to a high frequency electrical field to heat the wood by the dielectric effect to a temperature of about 210° F. until its moisture content has been reduced to essentially zero, thereafter heating the wood to a temperature between 275° F. and 325° F., immersing said wood while so heated and while at a substantially zero moisture content in a melted bath of impregnating material at a temperature substantially below the temperature of the wood, and maintaining said wood in said impregnating bath until at least 25% by weight of impregnant based on the weight of the dry wood has been disposed within the body of the wood.

6. In a method of impregnating wood, the steps comprising subjecting the wood to a high frequency electrical field to heat the wood by the dielectric effect throughout its extent to a temperature about the boiling point of water until its moisture content has been reduced to essentially zero, subjecting the wood to the further action of a high frequency electrical field to elevate the temperature of the wood throughout to a degree above 212° F. and below the charring temperature of the wood, with the interior portion of the wood at a temperature at least as high as the temperature of the surface portions, and immersing said wood while so heated into a fluid bath of impregnating material the temperature of which is below 212° F.

7. In a method of completely filling wood throughout its body with an impregnant to eliminate the absorption of moisture by the impregnated wood, the steps comprising subjecting the wood to a high frequency electrical field in two stages, first to heat the wood to a temperature about the boiling point of water where water will be driven therefrom until the water content of the wood has been reduced to essentially zero; and, second, to heat the wood to a temperature substantially above 212° F. but below its charring temperature after substantially all of the water has been removed from the wood to thus produce a heated body of wood free of end checking or cracking the temperature of which is higher within the body than at the surfaces thereof, and applying a fluid impregnant to said body at a temperature which is substantially below the temperature of the wood, whereby the wood upon cooling will cause the impregnant to be drawn into the body thereof to completely fill the same therethroughout.

8. In a method of impregnating wood, the steps comprising subjecting the wood to a high frequency electrical field to heat the wood by the dielectric effect to a temperature of about 212° F. where moisture will be driven from the wood until the water content of the wood has been reduced to essentially zero, subjecting the wood to a further action of a high frequency electrical field to heat the wood to a temperature between 270° F. and the charring temperature of the wood, and immersing the wood while so heated into a bath of impregnating material the temperature of which is below 212° F.

9. In a method of impregnating wood, the steps comprising confining said wood between pressing surfaces, subjecting the wood to a high frequency electrical field in two stages, first to heat the wood by the dielectric effect to a tem-

2,631,109

9

perature about the boiling point of water until its moisture content has been reduced to essentially zero, and second to heat the wood to a temperature between 212° F. and its charring temperature, the second-stage heating being effected by subjecting the wood to a high-frequency field at a higher voltage than in the first-stage heating, and applying to the wood while so heated a melted impregnant the temperature of which is lower than the temperature of the wood.

10. In a method of substantially completely filling wood throughout its body with a waxlike impregnant to eliminate the absorption of moisture by the impregnated wood, the steps comprising subjecting the wood to a high-frequency electrical field in two stages, first to heat the wood to a temperature of about 210° F., at which water will be driven from the wood, until the water content reaches essentially zero without cracking or checking of the wood, and second to heat the wood to a temperature between about 275° F. and about 325° F. after substantially all of the water has been removed from the wood

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to thus produce a highly heated body of wood free of any checking or cracking, the temperature of which is higher within the body than at the surfaces thereof, and immersing the body so heated in a melted bath of waxlike impregnating material, the temperature of which is at least 50° F. lower than the temperature of the wood, whereby the wood upon cooling will cause the impregnant to be drawn into the body in order to substantially completely fill the same therethroughout.

GEORGE E. GARD.

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15 The following references are of record in the file of this patent:

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Number	Name	Date
20 Re. 5,040	Palmer	Aug. 20, 1872
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686,582	Brinkerhoff	Nov. 12, 1901
707,224	Giussani	Aug. 19, 1902
2,397,615	Mittelman	Apr. 2, 1946

March 2, 1926.

1,574,890

W. T. HOFMANN
 PROCESS FOR PRODUCING A WATERPROOF SHEETED
 SUBSTANCE AND PRODUCT PRODUCED THEREBY
 Filed March 17, 1922

Fig. 1.

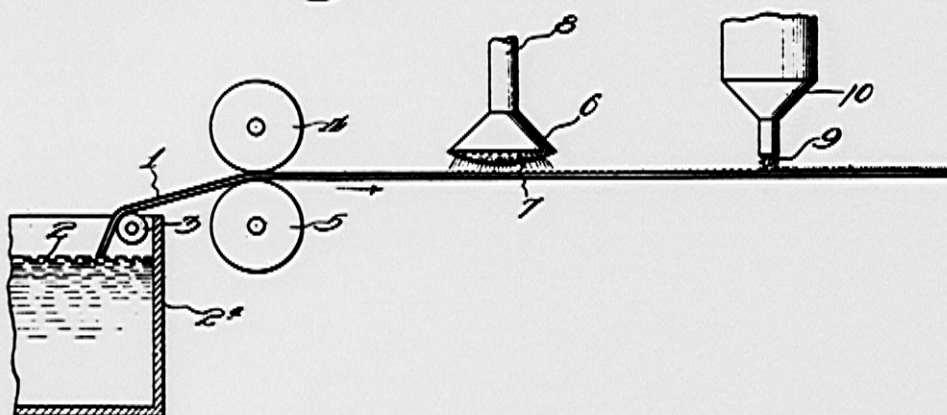
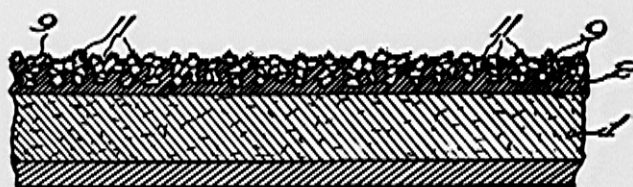


Fig. 2.



Fig. 3.



Witness:

Stephen H. Weber

Inventor:

William. T. Hofmann.

By Frank L. Belknap, Attorney

Patented Mar. 2, 1926.

1,574,890

UNITED STATES PATENT OFFICE.

WILLIAM T. HOFMANN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BECKMAN-DAWSON ROOFING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PROCESS FOR PRODUCING A WATERPROOF SHEETED SUBSTANCE AND PRODUCT PRODUCED THEREBY.

Application filed March 17, 1922. Serial No. 544,594.

To all whom it may concern:

Be it known that I, WILLIAM T. HOFMANN, a citizen of the United States, residing in the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Processes for Producing a Waterproof Sheeted Substance and Product Produced Thereby, of which the following is a specification.

This invention relates to a process and apparatus for producing a waterproof sheeted substance and refers more particularly to a process for producing sheeted siding or sheeting material used by the building trades.

Among the objects of the invention are to provide a process for producing a sheeted material which may be used as a siding for dwellings in place of lath for interior construction and for numerous other uses where a waterproof sheeted material having a rough surfacing layer may be employed.

Fig. 1 is a diagrammatic side elevational view of the apparatus.

Fig. 2 is a sectional view of the finished sheet with the material surfaced with a coarse grit.

Fig. 3 shows a sectional view of the material having a finer coating of cement or stucco imposed upon the coarse grit.

Referring to the details of the drawings, a felted fibrous base 1, such as commonly used in the prepared roofing industry, is saturated and coated with a coating substance 2 contained in a tank 2^a. The sheet after being coated in the saturating tank, is passed over roll 3 and between the pressure roll 4 and bed roll 5 where the coating substance is evenly distributed over the sheet. The coated sheet with the viscous waterproofing substance still in a semi-solid or plastic state, is passed over a blower comprising a wide nozzle or shower 6 which has a plurality of small holes 7 in the bottom thereof, through which an air blast under high pressure delivered to the shower through the line 8 is blown directly onto the surface of the sheet. One or more of these blast nozzles will be positioned over the sheet according to its width. The air blast blowing directly upon the viscous coating substance produces an irregular surface with innumerable furrows and upstanding portions which set

simultaneously with their forming due to the cooling effect of the air blast. Onto this jagged, coarsely denticulated surface is applied a granular surfacing material of coarse grit 9 by means of a hopper 10, which may be rolled to produce a flat surface or may be left in an irregular state and stucco or cement applied thereto. In using the material for siding, where stucco or a cementitious substance is to be applied, the coarse, irregular, conglomerate or heavy grit surfacing applied to the irregular coating may be left in its irregular form and the cement or stucco coating applied directly thereto. In a similar manner the blast may be applied when the sheet is to be used for interior work in the place of wood or metal lath.

In Figs. 2 and 3 at 1 is shown the base or felted fibrous material 1 which is coated with a waterproofing substance 2. Filling the uneven surface of the coating substance is a coarse grit 9. In Fig. 2 the coarse grit is left intact and produces a rough uneven surface. In Fig. 3 this coarse surface has been finished with stucco or cement as shown at 11.

The fact that the surfacing material is underlaid with a waterproofing substance prevents the cracking due to the inroads of moisture and the flexible character of the sheet combined with its waterproofing qualities prevents the cracking and disintegration normally attendant with the rigid stucco or plaster covering used commonly in relatively cheap exterior surfacing.

For temporary structures a material of this type is particularly adapted for use where an attractive siding is desired to take the place of stucco, metal or wood. While perhaps not as permanent as wood or sometimes of stucco, it will nevertheless endure the ravages of the elements for considerable period and the cheapness of the material and its application to a surface makes it very attractive for innumerable types of construction.

I claim as my invention:

1. A process for producing a waterproof sheeted material, consisting in passing the sheet through a waterproof saturant and subjecting the applied coating to the roughening effect of a finely divided air blast to set the coating and produce a denticulated

surface, applying coarse surfacing material to the roughened coating and imposing a cementitious covering thereon.

2. A waterproof sheet, consisting of a
5 felted fibrous base saturated and coated with a waterproofing substance, one surface of the sheet having irregular furrows and raised portions and having a coarse granular surfacing applied thereto.

10 3. A waterproof sheet, consisting of a felted fibrous base saturated and coated with a waterproofing substance, the coating substance having irregular furrows and ridged portions on one surface and covered with a
15 coarse granular surfacing material and a cementitious coating.

4. A process for producing a waterproof sheeted material, consisting in saturating and coating a sheet with a waterproofing

substance, passing the coated sheet through
20 a roughening operation to cause the coated substance to form an irregular furrowed and ridged denticulated surface, applying a surfacing material to the roughened irregular surface of the sheet, and rolling said
25 surfacing material to produce a substantially flat surface.

5. A process for producing a waterproof sheeted material, consisting in passing the sheet through a waterproof saturant and
30 subjecting the applied coating to the roughening effect of a finely divided air blast to set the coating and produce a denticulated surface, applying coarse surfacing material to the roughened coating and imposing a
35 cementitious covering thereon.

WILLIAM T. HOFMANN.

Patented Nov. 7, 1922.

1,435,031

UNITED STATES PATENT OFFICE.

WILSON TAYLOR, OF TORONTO, ONTARIO, CANADA.

PROCESS FOR PREVENTING THE WATER-LOGGING OF NON-RESINOUS WOODS.

No Drawing.

Application filed February 26, 1921. Serial No. 448,340.

To all whom it may concern:

Be it known that I, WILSON TAYLOR, a subject of the King of Great Britain, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Processes for Preventing the Water-Logging of Nonresinous Woods, of which the following is a specification.

10 My invention relates to improvements in processes for preventing the water-logging of non-resinous woods and the object of the invention is to devise means for preventing logs of non-resinous wood when floating upon the surface of the water down stream from becoming water-logged. My process consists of heating the surface of the log above the temperature of the liquid to be applied thereto and then applying a coating of heated water proofing material so that it will impregnate the heated surface of the wood and solidify when cooled, then suddenly chilling the wood to prevent saturation by the waterproofing liquid beyond 25 a predetermined depth.

I will now describe my process in detail. After the cutting of the standing timber, the logs resulting therefrom are dried out by the weather so that their specific gravity 30 is less than that of water to enable them to float even for a few minutes. The ends of the logs are then rapidly heated by a blast of hot dry air or by the application of a heated plate of iron for a few seconds of time or by any other suitable means to a temperature above the temperature of the liquid to be afterwards applied so that such liquid will readily penetrate and not become chilled by contact with the wood.

40 Immediately after the heating, the ends of the logs are swabbed over two or three times with melted paraffin. After this operation is complete, the wood is suddenly cooled by applying a fine spray or stream of water 45 thereto so as to prevent the paraffin saturating the wood too far, the object being to form a thin covering of saturated wood fibre which will prevent moisture passing therethrough into the body of the wood and yet at the same time not to saturate any more of the wood than is necessary to accomplish this result as the saturating of the wood destroys its quality.

After the paraffin is hardened the ends are again swabbed two or three times to leave a 55 thick impenetrable coating which effectually prevents the water from entering the wood. If the specific gravity of the wood is near that of water the bark should be removed from the tree when cut and the sides dried 60 by the weather as far as possible, then heat is applied to the surface of the wood either by a blast of hot air or by a hot plate passing over the wood in close proximity thereto, the heating of the wood being followed by 65 a single swab of hot paraffin. The effect of this is to prevent for a long time the absorption of water through the sides of the log.

What I claim as my invention is:

70 1. A process for preventing the water-logging of non-resinous woods while in the logs from which the bark has been removed consisting of first weather drying the log until it has a specific gravity less than 75 water, then rapidly heating the surface of the log to a temperature above the melting point of paraffin, then swabbing such surface while heated, with melted paraffin, and finally immediately after swabbing suddenly 80 cooling the heated portion of the log to retain the paraffin closely adjacent to the surface of the log, thus forming an exterior strata of wax impregnated fibre extending over the whole surface of the log. 85

2. A process for preventing the water-logging of non-resinous woods, consisting of first weather drying the log until it has a specific gravity less than water, then rapidly heating the surface at the end of the 90 log, then swabbing the heated surface with melted paraffin, then chilling such surface to harden the wax, and finally further applying melted paraffin thereto.

3. A process for preventing the water- 95 logging of non-resinous woods consisting of heating the surface of the wood to a temperature above the melting point of paraffin, applying the melted paraffin to the log's surface whereby the paraffin, exterior to the fibres, is 100 carried into the stratum to serve as an air seal extending over the surface of the log, and then chilling the surface to prevent the paraffin entering deeply beneath the surface of the log.

WILSON TAYLOR.

Defendant's Exhibit 1(F)

Paper No. 34

U.S. DEPARTMENT OF COMMERCE

PATENT OFFICE

WASHINGTON

Appeal No. 418-33

BEFORE THE BOARD OF APPEALS

In re application of HELGE ERIK LEVRING

Ser. No. 671,412

Filed July 12, 1957

For METHOD OF APPLYING COATINGS TO THE SURFACES
OF POROUS MATERIAL

Donald A. Kaul

Mailed April 30, 1965

Examiner's Answer

This appeal involves claims 9, 10 and 11. No claim has been allowed.

A correct copy of the appealed claims appears on pages 1 and 2 of applicant's brief.

The references of record relied on are:

Aylsworth	1,139,470	May 18, 1915
Carter	1,140,873	May 25, 1915
Taylor	1,435,031	Nov. 7, 1922
Hofmann	1,547,890	Mar. 2, 1926
Gard	2,631,109	Mar. 10, 1953

BRIEF DESCRIPTION OF THE INVENTION

The invention relates to a method of coating the surface of various porous materials such as wood, paper, cork and "fibre" which method includes superficially preheating the

surface of said material to a temperature between 150° F. and 390° F. from 10 to 120 seconds, applying diverse types of coating materials, such as "nitrocellulose lacquers" or "varnish polymerizing lacquers", "melamine", "urea-modified alkyd-resins", "hydrated castor oils", "and many baking enamels of drying oils", to the heated surface. The heating conditions selected being such so that upon application of the coating material the temperature of the surface will immediately drop by at least 50° F. Hardening or drying of a coated wooden surface may be accelerated by a blast of cool air, if said surface is to be subsequently coated.

The base and the coating in the appealed claims are limited to a wooden surface and polymerizable lacquer, respectively.

BRIEF DESCRIPTION OF THE REFERENCES

The Aylsworth patent relates to a process for treating porous cellular or fibrous substances, such as wood, comprising pre-heating the wood to a temperature of 220° F., coating the wood with a solution of a heat hardenable varnish having a temperature less than that of the wood and reheating to form an infusible coating.

The Taylor patent, page 1, lines 16 to 39, teaches rapidly heating the ends of logs, for a few seconds of time, above the temperature of molten paraffin wax and coating the heated ends with molten paraffin wax.

The Gard patent, column 5, lines 7 to 25, column 4, lines 43 to 61 and column 7, lines 17 to 24, teaches that a temperature differential of at least 50° F. should exist between wood and the usual impregnants and that the pre-heating of the wood may be localized.

The Carter and Hofmann patents are cited because they show that it is a conventional practice in the coating art to subject a coated base to a blast of cool air.

APPLICATION OF THE REFERENCES TO THE CLAIMS

Claims 9, 10 and 11 stand rejected as unpatentable under 35 U.S.C. 103 over Aylsworth in view of Taylor and Gard taken with either Carter or Hofmann. These claims define a method for coating the surface of a wooden article comprising superficially heating the surface of said article for a period not exceeding 120 seconds to a temperature between 120° F. and 130° F., and immediately thereafter applying to said surface a lacquer, the heating conditions selected being such that upon application of the lacquer the temperature of the surface will immediately drop by at least 50° F.

The Aylsworth patent, lines 10 to 16, line 40 to line 108, discloses a process for treating wood which includes pre-heating the wood to a temperature of 220° F., coating the wood with a solution of a heat hardenable varnish having a temperature less than that of the wood and *reheating* to form a infusible coating. Admittedly Aylsworth does not teach "superficially heating" the surface of the wood "for a period not exceeding 120 seconds" as called for in the appealed claims. However, the quoted language represents nothing more than conventional practice in the art as evidenced by Taylor, page 1, lines 16 to 39 and by Gard, column 5, lines 7 to 25, column 4, lines 43 to 61 and column 7, lines 17 to 24. As a matter of fact, Taylor, lines 31 to 35, fully meets the limitation of the appealed claims relative to heating only the surface of a wooden article, since the ends of logs are the surfaces of wooden articles. The Carter and Hofmann patents also show that it is conventional to subject a coated base to a blast of cool air. The Examiner is of the view that it would be obvious to one of ordinary skill in this art to modify Aylsworth process in the manner defined in the appealed claims in view of the secondary references.

RESPONSE TO ALLEGATIONS IN BRIEF

Applicant contends that in the prior art, the entire wooden article is heated. The Examiner cannot agree with this contention since Taylor, lines 31 to 35, heats only the ends of logs, and Gard, column 7, lines 17 to 24 suggests localizing the heating.

Applicant lists in his brief on pages 5a and 6, three important aspects of his invention. Since these three enumerated steps are clearly suggested in the references it is the Examiner's opinion that the claimed combination would be obvious to one of ordinary skill in this art. It is not apparent that any new and unobvious results are obtained by the claimed combination of steps, each of which is conventional in the coating art as evidenced by the cited references.

For the reasons set forth above it is believed that the rejection of the appealed claims should be sustained.

Respectfully submitted,

WILLIAM D. MARTIN
Examiner, Group 160

TGD:meb
WO 7-2867

Defendant's Exhibit 1(G)

Paper No. 38

Appeal No. 418-33

Hearing: June 28, 1965

MAILED Aug 13, 1965

IN THE UNITED STATES PATENT OFFICE
BEFORE THE BOARD OF APPEALS

Ex parte HELGE ERIK LEVRING

Application for Patent filed July 12, 1957, Serial No. 671,412. Method of Apply Coatings to the Surfaces of Porous Material.

SAWYER and KENNEDY and DONALD A. KAUL for appellant.

Before FEDERICO and ROSA, Examiners-in-Chief, and STONE, Acting Examiner-in-Chief.

STONE, Acting Examiner-in-Chief.

This is an appeal from the final rejection of claims 9, 10 and 11, which are all the claims remaining in the application.

Claim 9 is illustrative and reads:

9. A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating said article for a period not exceeding 120 seconds to raise the surface temperature thereof to a temperature of between 120° F and 390° F, and immediately thereafter applying to the surface of said article a lacquer finish, the time and intensity of said heating and the temperature of which is selected so that upon the application of the lacquer to the surface of the article the temperature of the surface of the article will immediately drop by at least 50° F.

The references relied on are:

Aylsworth	1,139,470	May 18, 1915
Carter	1,140,873	May 25, 1915
Taylor	1,435,031	Nov. 7, 1922
Hofmann	1,574,890	Mar. 2, 1926
Gard	2,631,109	Mar. 10, 1953

The claims stand rejected as unpatentable over Aylsworth in view of Taylor and Gard and in further view of Carter or Hofmann. The Examiner points out that Aylsworth shows heating a wooden article to 220° F., applying thereto a heat hardenable varnish having a temperature less than the heated wood and then reheating to set the varnish. To superficially heat the surface for a short time is considered old in the art by the Examiner who cites Taylor and Gard to illustrate this. Cooling a coated surface with a blast of cool air is admittedly old and is shown by Carter and Hofmann. The Examiner holds in view of the teaching of the supplementary references, it would be obvious to superficially heat Aylsworth's wooden surface for the short time recited.

Appellant argues that it is improper to combine the teachings of the references to meet the terms of the claims. It is pointed out that Aylsworth heats for several hours while appellant takes only several minutes and that Gard heats the interior of the wood whereas only the surface is heated by the claimed method.

We have carefully considered appellant's arguments but we do not find any error in the rejection of the claims by the Examiner. Aylsworth accomplishes substantially the same result as appellant but heats the wooden article to 220° F. or higher. To superficially heat a wooden surface rapidly and then impregnate is old as shown by Taylor. Gard heats a wooden surface for relatively short time and then impregnates with a resin. As shown by column 7, lines 18 to 21, Gard may localize the heat and impregnate only the heated area. This is the equivalent

of a superficial heating. To cool the impregnated surfaces with a cool blast of air is well known, as acknowledged by appellant, and as shown by Carter and Hofmann.

The application of the resin to the surface so that its temperature will drop at least 50° F. is shown by Gard, column 5, lines 14 to 25. It thus appears that every aspect of the method is old or substantially shown by the art and has been employed in the impregnation of the surface of a wooden article. The only thing not shown is the heating time of not over 120 seconds. Gard mentions five minutes. Taylor says to heat rapidly, column 1, lines 31 to 39, and implies in line 34 that a few seconds is sufficient. To therefore heat to not more than 120 seconds would be obvious when only superficial heating as suggested by Taylor is used.

Accordingly, to employ the steps recited in one process for the purpose in view is considered to be obvious and not patentable over the references cited.

The decision of the Examiner is affirmed.

AFFIRMED

Mr. Donald A. Kaul
National Press Building
Washington, D. C.

Specification and Original Claims

The invention relates to a method of applying coating to the surfaces of porous materials of poor heat conductivity such as wood, paper, cork and fibre, which method includes the step of heating the surface in question to a predetermined temperature considerably above ordinary room temperature in order to cause the air within the pores of the said surface to expand and a great part thereof and of undesired humidity contained in said pores to be driven off, and the step of subsequently applying a coating consisting e.g. of a varnish or enamel or oil to the heated surface by roller coating, brushing, pouring, spraying or dipping.

It has previously been proposed in a method of the kind referred to to heat the material the surface of which is to be coated to a temperature between 150° F. and 325° F. and to either maintain this temperature of the material until the coating applied is substantially dry or to subject the said coating, immediately after the application of same to the surface in question, to a blast of air of lower temperature than said material.

The present invention is based upon the observation that in a method of the kind referred to an improved effect in respect of a more dense and wear-proof surface coating and a surprising effective impregnation of the pores of the surface in question with a coating is obtained if the said surface prior to the application of the coating to same is exerted to a rapid heating, which means a heating being completed in the course of a very short interval of time, say from 10 to 120 seconds, to a temperature between 150° F. and 390° F. depending upon the kind of material to be coated and of the coating to be applied, and immediately thereafter is supplied with the coating in question and thereby is suddenly cooled to a temperature which depending upon the temperature to which the said surface was heated prior to the application of the coating, is at least 70° F. to 210° F. lower than the last mentioned temperature. If so the air in the pores of the surface in question will suddenly contract in the same moment when the coating applied has entered the pores and will retain the absorbed coating which due to the sudden reduction in temperature is suddenly rendered more viscous and therefore has no tendency to drive off from the pores. The sudden reduction of the temperature of the coated surface should preferably be of such size as not to reduce the said temperature to a value below ordinary room temperature, especially not if the surface in question after having been supplied with one coat is to be supplied with a further coat or if the coat applied needs a further heat treatment to terminate, e.g. a polymerization or a condensation. If so a

further heating of the surface should ordinarily be cause and to this end the heat accumulated in the body of the article in question may by heat conduction to the said surface assist the purpose of a rapid re-heating of said surface.

The heating of the surface to be coated may be effected in any well known manner, e.g. by heat radiation against said surface or in an oven and the sudden reduction of the temperature of the heated surface when the coat is applied to same may be caused by the mere application of the finish in a liquid state to said surface, the finish having prior to the application a temperature being considerably lower than the temperature of the heated surface, or may be cause partly by the mere application of the liquid finish and partly by simultaneous and subsequent supply of a blast of cold air to said surface.

The coat to be applied in a method according to the present invention may be of a vegetable, animal or mineral origin, such as nitrocellulose, lacquers or varnish, polymerizing lacquers, urea-modified alkyd-resins, melamine, phenol- and substituted phenol-formaldehyde resins, hydrated castor oils, silicon-polyester and many baking enamels of drying oils.

The temperature to which the surface to be treated is heated depends upon the kind of finish to be used. As an example the said temperature may be 150° F. to 200° F. if a cellulose-varnish is used, whereas e.g. an urea-modified alkyd-resin would require a heating of the surface in question to a considerable higher temperature such as 270° F. to 390° F. The said temperature should under no condition be elevated to a value at which vapours or physical or chemical changes of the finish or bubbles in same are caused.

Due to the very rapid heating of a surface to be coated according to the present invention and the sudden reduction of the temperature of said surface in applying the finish to same a finishing of a surface of a certain area may accord-

ing to the method forming the object of the present invention be carried out in the course of a time interval which is very short in relation to time to be used according to hitherto known methods of finishing porous surfaces of a corresponding area, and as a matter of fact a finishing operation according to the present invention is established and completed in a number of seconds being not higher than the number of minutes required to fulfill a finishing operation according to known methods.

The amount of energy consumed in carrying out a finishing operation according to the invention amounts to a surprising low value, only say 2 a 10 watt-hours per square foot of the surface in question, depending upon the heat conductivity of the material, the surface of which is to be coated and the thickness of the coat to be applied, and upon the degree of temperature to which said surface is to be heated with a view to the kind of finish to be used.

Tests have proved that the material, e.g. wooden boards, treated in a method according to the present invention has no remarkable tendency to warp, and that the wearing quality not only of the coating applied to the surface of wood but besides of the outermost layer of the wood facing said surface has been considerably increased relatively to what is obtainable in said respect in hitherto proposed methods of the kind referred to.

The hardening or drying of the coating applied in a method according to the invention to a wooden surface may be accelerated by the supply of a blast of cool air against the coated surface as referred to above. Especially in order to arrange for a subsequent supply in the manner described of a further film of a finish upon the already established coating, facts have proved that the application of such further film or layer after a re-heating in the previously mentioned manner to a lower temperature than before application of the first layer would not injuriously affect the previously applied coating.

I claim:—

1. A method of coating a porous surface of an article which comprises the step of heating said surface within an interval of time not exceeding about 120 seconds to a temperature between 150° F and 390° F and subsequently applying to said surface while hot a finish in a liquid state and of a temperature sufficient low to cause a sudden reduction of the temperature of said surface to a temperature being at least 50° F lower than the temperature to which said surface was heated, however not below a room temperature.

2. A method of coating a porous surface of an article which comprises the step of heating said surface within an interval of time not exceeding about 120 seconds to a temperature between 150° F and 390° F and subsequently applying to said surface while hot finish in a liquid state and of a temperature sufficient low to cause a sudden reduction of the temperature of said surface to a temperature between 50° F and 150° F lower than the temperature to which said surface was heated.

3. A method according to claim 1 in which the sudden reduction of the temperature of the surface to be treated is caused by the mere application of the liquid finish to the said surface.

4. A method according to claim 1 in which the sudden reduction of the temperature of the coated surface is caused by the liquid finish as applied to the said surface in combination with a cooling of said surface in a blast of cold air.

5. A method of coating a porous surface of an article which comprises the step of heating said surface within an interval of time not exceeding about 120 seconds to a temperature between 150° F and 390° F and subsequently applying to said surface while hot a finish in a liquid state and of a temperature sufficient low to cause a sudden re-

duction of the temperature of said surface to a temperature being at least 50° F lower than the temperature to which said surface was heated, and re-heating the coated surface of the article to a temperature causing a polymerization or condensation of the applied coat.

Paper No. 24

U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE, WASHINGTON

Official Action of Jan. 27, 1964

Applicant: Helge Erik Levring

Ser. No. 671,412

Filed July 12, 1957

For Method of Applying Coating to the Surfaces
of Porous Material

Sawyer and Kennedy
60 East 42nd Street,
New York 17, N.Y.

This is in response to letter filed February 19, 1963.

Additional references:

Aylsworth	1,139,470	May 18, 1915	117-148 XR
Carter	1,140,873	May 25, 1915	117-Air Blast Dig.
Hofmann	1,574,890	Mar. 2, 1926	117-Air Blast Dig.

Claim 5 is rejected as unpatentable over Aylsworth in view of Taylor and Gard. The Aylsworth patent discloses, page 1, column 2, lines 65-86, a process of coating wood, which comprises heating the wood to a temperature of 220° F. or higher preferably about 250° F. but not at a temperature high enough to injure the wood, applying to the heated wood a coating composition in liquid form, the temperature of said composition being cooler than that of the wood, page 1, lines 51-54, and reheating the wood to

a temperature to form an infusible, hard coating of the applied composition. The Taylor patent teaches rapidly heating only the surface of wood, for a few seconds of time, above the temperature of the coating to be applied thereto, page 1, lines 16-39, as stated in Paper No. 8. The Gard patent, column 5, lines 22-25, teaches that a temperature differential of at least 50° F. should exist between wood and usual impregnants, as stated in Paper No. 10. It would be obvious to the ordinary skilled technician in the art to modify Aylsworth process in the manner recited in this claim in view of the teachings of the secondary references.

Claims 6 and 8 are rejected as unpatentable over Aylsworth in view of Taylor for the same reasons as claim 5. The cooler temperature of the coating composition taught in Aylsworth would variably reduce the temperature of the wood therein to no less than room temperature.

Claim 7 is rejected as unpatentable over the combined references for similar reasons as urged against claim 6 in view of Carter and Hofmann. The latter references are cited to show that it is conventional to subject a coated fibrous base to a blast of cool air. It would be obvious to subject the coated base in the combined references to a blast of cold air in view of the disclosures of the secondary references.

Claim 5 is further rejected for failing to particularly point out and distinctly claim the invention as required by 35 U.S.C. 112. The "polymerization or condensation" recited in this claim is inferential in that said term does not have proper antecedent support.

Summary:

Claims rejected: 5, 6, 7 and 8.

Claims cancelled: 1-4.

Claims allowed: none.

Examiner

T. G. Davis:mcb

IN THE UNITED STATES PATENT OFFICE

Division: Patent 25

Applicant: Helge Erik Levring

Serial No. 671,412

Filed: July 12, 1957

For: Method of Applying Coatings to the Surfaces
of Porous Material

New York, New York

July 21, 1964

Amendment of July 23, 1964

RESPONSE

Honorable Commissioner of Patents
Washington 25, D. C.

Sir:

This is in response to the Office Action of January 27, 1964.

It is respectfully requested that the claims be amended as follows:

Cancel claims 5, 6, 7 and 8 and add the following claims:

—9. A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating said article for a period not exceeding 120 seconds to raise the surface temperature thereof to a temperature of between 120° F and 350° F, and immediately thereafter applying to the surface of said article a lacquer finish, the temperature of which is selected so that upon the application of the lacquer to the surface of the article the temperature of the surface of the article will immediately drop by at least 50° F.—

—10. The method as in claim 9, comprising the further step of subjecting the surface of said article to a blast

of cold air upon the application of the lacquer to said surface.—

—11. A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating the surface of said wooden article for a period not exceeding 120 seconds to raise the surface temperature of said article to between 150° F and 390° F, immediately thereafter applying to said surface a lacquer finish, the temperature of said lacquer being so selected that upon application of said lacquer finish to said surface, the temperature of the surface will drop by at least 50° F and thereafter reheating the coated surface to a temperature sufficient to cause a polymerization of said lacquer.—

REMARKS

Claims 5, 6, 7 and 8, have been cancelled and new claims 9, 10 and 11 have been added. It is believed that these new claims which are more specific, specify the invention in this case more accurately and are novel over any of the prior art and references cited.

The crucial point of the invention of the present application is that the wooden article to be coated be heated so rapidly and intensively that only an extremely thin superficial layer of the wooden article is heated to the high temperatures, while practically no heat penetrates to the deeper layers of the wooden article. The lacquer is then applied in a naturally cool state, usually at room temperature, to the heat surface of the

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U.S. DEPARTMENT OF COMMERCE
PATENT OFFICE
WASHINGTON

In Reply Please Refer To:

Applicant: Helge Erik Levring

Ser. No. 671,412

Filed July 12, 1957

For Method of Applying Coatings to the Surfaces of Etc.

Final Rejection of Sept. 9, 1964

Sawyer and Kennedy
60 East 42nd St.
New York 17, New York

This is in response to the amendment filed July 23, 1964.

Claims 9, 10 and 11 are also rejected as unpatentable over Aylsworth in view of Taylor and Gard taken with Carter and Hofmann and for the same reasons set forth in paragraphs 1, 2 and 3 of the last Office action.

With respect to the primary reference, the Aylsworth patent relates to the coating of wood, which has been heated to a temperature of 220° F. or higher preferably about 250° F., with a solution of a heat hardenable varnish having a temperature less than that of the wood and reheating to form an infusible hard coating.

Regarding the secondary references, the Taylor patent teaches rapidly heating the surface of wood, for a few seconds of time, above the temperature of the liquid coating to be applied thereto, page 1, lines 16-39. Since the Gard patent, col. 5, lines 22-25 and col. 7, lines 17-21 teaches that a temperature differential of at least 50° F. should exist between wood and the usual impregnants and that the heating may be localized, it would be obvious to preheat

only the surface of the wood in Aylsworth, if it were desired to only impregnate the surface of the wood. The Carter and Hofmann patents show that it is conventional to subject a coated base to a blast of cold air. It would be obvious to one of ordinary skill in this art to modify Aylsworth's process in the manner defined in these claims in view of the disclosures of the secondary references.

Claim 9 is further rejected as being unsupported by the original disclosure in the recitation of the newly added limitation "between 120° F. and 390° F." The quoted limitation is not found in the original specification. Consequently, there is apparently no basis for this limitation in the application as filed.

Claim 11 is further rejected as failing to properly define the invention as required by 35 U.S.C. 112. The term "polymerization" is inferential in that said term does not have proper antecedent basis.

This rejection is made FINAL.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS ACTION IS SET TO EXPIRE FOUR MONTHS FROM THE DATE OF THIS LETTER.

IN THE UNITED STATES PATENT OFFICE

In re application of
HELGE E. LEVRING

Serial No. 671,412

Filed July 12, 1957

For: METHOD FOR APPLYING COATINGS TO SURFACES
OF POROUS MATERIAL Group 160

Amendment After Final Rejection—Jan. 8, 1965

Hon. Commissioner of Patents
Washington 25, D. C.

Sir:

In response to the Final Rejection dated September 9, 1964, and subject to the approval of the Examiner, please amend the above-identified application as follows to place the same in better condition for Appeal:

IN THE CLAIMS

Claim 9, line 5, change "350" to — 390 —;
line 7, after "the" insert—time and intensity of said heating and the —;

Claim 11, line 2, after "finish" insert — of the type hardenable by polymerization —;
line 7, after "the" insert — time and intensity of said heating and the —.

REMARKS

The present Amendment is submitted in an endeavor to place the subject application in better condition for Appeal. It will be noted that a Notice of Appeal has been filed concurrently

Paper No. 31

U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE
WASHINGTON

Donald A. Kaul
National Press Bldg.
Washington, D. C.

Applicant: Helge Erik Levring

Ser. No. 671,412

Filed July 12, 1957

FOR METHOD OF APPLYING COATINGS
TO THE SURFACES OF POROUS
MATERIAL

Group 160

Mailed January 29, 1965

Official Action of Jan. 29, 1965

Please find below a communication from the
EXAMINER in charge of this application.

Commissioner of Patents.

Depost Account No. No. of Copies

The amendment filed January 8, 1965 has been received and entered since it places the application in better condition for purposes of appeal.

The rejection of claims 9, 10 and 11 on the references and for the reasons set forth in the final rejection still stands.

Applicant's brief should be directed to the finally rejected claims.

WILLIAM D. MARTIN
Examiner

TGD:meb
WO 7-2867

IN THE UNITED STATES PATENT OFFICE
BEFORE THE PATENT OFFICE BOARD OF APPEALS

Appeal No. 41833

In re application of
HELGE ERIK LEVRING

Serial No. 671,412

Filed: July 12, 1957

For: METHOD FOR APPLYING COATINGS TO
SURFACES OF POROUS MATERIAL

Group 160

Brief On Appeal

DONALD A. KAUL
970 National Press Bldg.
Washington, D. C.
ME 8-0603
Attorney for Appellant

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IN THE UNITED STATES PATENT OFFICE
BEFORE THE PATENT OFFICE BOARD OF APPEALS

Appeal No. 41833

In re application of
HELGE ERIK LEVRING

Serial No. 671,412

Filed: July 12, 1957

For: METHOD FOR APPLYING COATINGS TO
SURFACES OF POROUS MATERIAL

Group 160

BRIEF ON APPEAL

Hon. Commissioner of Patents
Washington 25, D. C.

Sir:

This is an Appeal from the Decision dated September 9, 1964, in which the Primary Examiner finally rejected claims 9, 10 and 11 in the above-identified application, no claims therein being allowed.

Claims on Appeal

The claims on Appeal are as follows:

—9. A method of coating the surface of a wooden article with a lacquer finish which comprises superficially heating said article for a period not exceeding 120 seconds to raise the surface temperature thereof to a temperature of between 120° F and 390° F, and immediately thereafter applying to the surface of said article a lacquer finish, the time and intensity of the heating and the temperature of which is selected so that upon the application of the lacquer to the surface of the article the temperature of the surface of the article will immediately drop by at least 50° F. —

—10. The method as in claim 9, comprising the further step of subjecting the surface of said article to a blast of cold air upon the application of the lacquer to said surface.—

—11. A method of coating the surface of a wooden article with a lacquer finish of the type hardenable by polymerization which comprises superficially heating the surface of said wooden article for a period not exceeding 120 seconds to raise the surface temperature of said article to between 150° F and 390° F, immediately thereafter applying to said surface a lacquer finish, the time and intensity of the heating and the temperature of said lacquer being so elected that upon application of said lacquer finish to said surface, the temperature of the surface will drop by at least 50° F and thereafter reheating the coated surface to a temperature sufficient to cause a polymerization of said lacquer.—

References

The prior art relied upon in the Final Rejection is as follows:

Aylsworth	No. 1,139,470	May 18, 1915
Carter	1,140,873	May 25, 1915
Taylor	1,435,031	November 7, 1922
Hofmann	1,547,890	March 2, 1926
Gard	2,631,109	March 10, 1953

Description of Invention

The subject matter of the present invention, simply stated, is a process for applying a coating of lacquer or other suitable material, to the surface of a porous material, specifically, wood.

In carrying out the process of the present invention, the wooden article to be coated is heated rapidly and intensively to raise only the surface layer thereof to a high

temperature, while at the same time, permitting virtually no heat to penetrate to the deeper layers of the wooden article. The lacquer or finish to be applied is maintained in a natural unheated state, generally at room temperature, and is applied immediately upon termination of the surface heating step. When the unheated lacquer contacts the heated micro-thin surface layer of the article, a heat exchange or temperature equalization reaction takes place, with the surface layer being cooled and the lacquer being heated. The temperature equalization reaction, occasioned by the lacquer absorbing the heat from the surface layer, is virtually instantaneous, and thus, the surface of the article is cooled in a very sudden manner.

This instantaneous temperature equalization, described hereinabove, creates certain specific advantages in the process. That is, because of the sudden cooling of the surface layer, which takes place almost simultaneously with application of the lacquer, a vacuum is created in the pores of the surface layer, and this vacuum sucks the lacquer coating into the pores. As was previously described, the interior of the wooden article is substantially unheated, and at the time the lacquer is sucked into the pores, the instantaneous temperature equalization cools the surface layer of the article to substantially the same temperature as the interior layer thereof. Thus, since no heat radiates outwardly from the article after the lacquer has been sucked into the pores, there can be no expansion of the air in the pores, and thus no air bubbles will be formed in the lacquer coating. Instead, the lacquer coating is left wholly undisturbed to solidify, and even this solidification takes place very rapidly because of the rising temperature occasioned during the heat exchange and temperature equalization reaction at the surface.

Although the foregoing description accurately summarizes the present invention, it is felt that the unique and advantageous features of the present invention can

be better understood by specifically distinguishing the present invention from the conventional method of applying coatings to porous wooden articles. In such conventional method, as shown by the prior art, the entire wooden article is heated by a deep heating action, which not only heats the exterior or surface layer of the article, but also heats the inner layers thereof. Thereafter, the lacquer coating is applied, and whether such lacquer coating is applied in an unheated state, or in a heated state, the unique results of the present invention cannot possibly be obtained. First of all the heat accumulated in the inner layers of the article would have to escape or dissipate, and such heat would radiate outwardly, thereby elevating the surface of the article and the lacquer applied thereto to a high temperature, approximating that to which the article was originally heated. Even if the so-called "suction effect" (sucking of the vacuum into the pores of the surface of the wood) could be accomplished in this process, which, in itself, is an extremely dubious conclusion, such suction effect even if produced would be meaningless. This is true since even if the lacquer coating were sucked into the pores of the wood, the air within the pores would be driven outwardly by expansion as the inner layers cooled, and as such air was driven outwardly through the pores, it would tend to create air bubbles in the surface of the lacquer, thus producing an unsightly and unsatisfactory surface coating.

While it is true, as stated hereinabove, that the principal and most surprising advantage of the present invention lies in the fact that the coating formed is very regular and smooth, since no pits, bubbles, or the like are created on the surface thereof, there are still other and further advantages which are achieved by use of the process set forth in the instant application. For example, because of the very brief and superficial nature of the heating of the article, the moisture content of the article as a whole remains substantially constant, and thus the original or na-

tural qualities of the article are not substantially altered and remain generally uniform. Moreover, since the moisture content remains substantially in its initial state, there is no tendency for the article to warp and thus the article maintains its initial shape and dimensional condition. Still further, since the time of heating in the present process is extremely short, the process can be carried out in a minimum amount of time, thereby enabling a greater number of articles to be coated during any given time period. Finally, because the heating step requires only a superficial heating of the article surface, the heat economy is good since no heat is wasted for needlessly heating the interior of the article.

It is believed that the foregoing descriptive matter not only describes the process of the present invention and the manner in which this process produces a vastly improved surface coating in a very short time, but also, it serves to establish that prior art conventional techniques cannot accomplish anything which even approximates the results obtained by the present invention. To reiterate, and to summarize the important aspects of the present invention, these aspects include, *inter alia*:

1. Rapidly and intensively heating only the surface layer of an article to be coated.
2. Applying the lacquer coating in an unheated condition to the heated surface layer of the article.
3. Carrying out the coating applying step immediately upon cessation of the heating step.

It is broadly the combination of these three features which produce the unique and desirable results which are obtained by the present invention.

As to the specifics of the present invention, the article is "superficially" heated to raise the surface layer thereof (having a depth of approximately 1/10th of a millimeter) to a temperature between 120° F and 390° F. This heat-

ing step takes place in a time not exceeding 120 seconds. Then, immediately upon cessation of this heating step, a cool lacquer or finish coating is applied to the exterior of the wood. The temperature of the lacquer and the time and intensity of the heating are so selected and so correlated to one another that upon application of the lacquer to the heated surface, the temperature of the surface will instantaneously drop by at least 50° F. This sudden temperature drop of 50° F or more is necessary to produce the above described sucking action which draws the lacquer coating into the pores of the article.

The Prior Art

There are five prior art patents relied upon the Examiner in the Final Rejection; the Aylsworth patent being the primary or basic reference, the Taylor and Gard patents being secondary references, and the Carter and Hofmann patents being additional or tertiary references.

The Aylsworth patent relied upon by the Examiner as the basic reference, does indeed teach a process having a purpose similar to that of the present invention. Namely, Aylsworth teaches a process for coating wood or other porous articles with a surface coating of a varnish or enamel composition. In carrying out his process, Aylsworth first keeps the wooden article for several hours at a temperature of 220° F or higher (page 1, line 69) and thereafter, while the wood is *still hot* (page 1, line 76), it is dipped into the enamel composition. Thus, it can generally be seen that Aylsworth teaches heating the article *throughout* (i.e., heating its interior layers as well as its exterior layers) during a "several hours" heating operation and then dipping the heated article "while hot" into the coating material.

The secondary reference to Gard teaches a process for impregnating wood with a thermo-plastic material. In carrying out his process, Gard heats the wood by dielectric

heating until it obtains "a substantially uniform temperature throughout" (column 3, lines 15-16). Specifically, with regard to the heating temperatures, Gard teaches "having the interior of the wood at least as high as the exterior and possibly somewhat higher" (column 3, lines 19-21). Thereafter, the wooden article, heated uniformly throughout, is immersed in a bath of impregnating material.

The secondary reference to Taylor is concerned with a process for treating the ends of logs to prevent water-logging thereof. The material with which the ends of the log are coated is "melted paraffin" * (page 1, lines 42, 70, 92 and 99). Taylor does teach that the ends of the logs are to be heated to a temperature which maintains the paraffin in its molten condition, i.e., a temperature at which the paraffin will "not become chilled by contact with the wood" (page 1, lines 38-39). When the ends of the logs have been so coated by the molten paraffin, a spray or stream of cold water (page 1, line 44) is directed against the paraffin to cool and solidify the same.

The references to Carter and Hofmann are cited by the Examiner only to show that the use of a cold air blast is known in a coating process. Appellant does not dispute this broad assertion, but rather, only points out that the provision of an air blast does not constitute a feature which is alleged to be novel in the present invention.

The Final Rejection

The Examiner finally rejected claims 9, 10 and 11 as "unpatentable over Aylsworth in view of Taylor and Gard taken with Carter and Hofmann".

The Examiner relies upon the Aylsworth patent to show a coating process for wood wherein the wood is heated to a temperature of 220° F or higher and is then coated with

* According to Chambers Technical Dictionary, III Edition, 1958, the melting point of paraffin is approximately 65° C or 149° F.

a varnish. The Taylor patent is relied upon for heating the end surface of a wooden log, for a few seconds of time, above the temperature of the melted paraffin to be applied thereto. The Gard patent is relied upon to show, in an impregnating process, that the wood should be heated to at least 50° F above the temperature of the impregnating material, and that the heating and impregnating may be localized.

As to the further rejection of claim 9 and claim 11 on technical grounds, it will be noted that these technical rejections have been overcome by way of an amendment after Final Rejection which was entered for purposes of simplifying the issues on Appeal.

Errors in the Final Rejection

This is, perhaps, the classic case of an Examiner, in his zeal to find some grounds for rejecting a patent application, improperly combining a series of references in a manner which is unsuggested by any of the references, and in a manner which is wholly impossible and impractical.

As was pointed out hereinabove in the description of the present invention, it is considered critical that the heating step be only "superficial", or stated another way, that only the surface of the wooden article be heated. Each of the claims recites the step of superficial heating and further recites that the temperature of such heating is between 120° F and 390° F, and that the time of such heating is not in excess of 120 seconds.

The basic reference to Aylsworth does not even remotely anticipate this feature of the process, as claimed. Instead of heating the wood superficially for less than two minutes, Aylsworth instead teaches heating the wood uniformly throughout, with such heating being carried out for "several hours". In this regard, the teaching of Aylsworth is directly contrary to that of the present invention, and the very best that could be said for the Aylsworth patent as a

reference is that it teaches a heating temperature which falls within the range of heating temperatures specified in the claims of the present application.

As for the Gard patent, this patent again teaches heating a wooden article uniformly throughout, and, in fact, this patent specifically states that the interior of the wood is to be heated "at least as high as the exterior". The time during which such heating is carried out is "usually about 5 to 10 minutes" (column 4, line 16), and thus again it can be seen that the only pertinency of the Gard patent as a reference, if any at all exists, lies in the fact that the heating temperature in the Gard process falls within the range of heating temperatures claimed in the present application.

In column 7, lines 16-24, Gard states:

"Generally, it is desirable to impregnate the whole of the article, but with the present invention it is possible to localize the heating and impregnate only in those areas which have been heated. For example, local impregnation of end sections of wood is frequently desired, and this may be economically accomplished by the method of the present invention."

The Examiner has seized upon this statement and has suggested that it provides, in some unknown manner, a teaching that "it would be obvious to pre-heat only the surface of the wood in Aylsworth, if it were desired to only impregnate the surface of the wood". Of course, such a statement is in direct contradiction to the overall teaching of the Gard patent. While this statement from the Gard patent quoted above does indicate that the Gard process can be carried out on only part of the wooden article, rather than on the entire article, it in no way suggests that the process itself, or the fundamental principles thereof, can be changed. *The fundamental principle of the Gard patent lies in heating the interior of the wood to a temperature at least as high, and preferably higher, than the*

exterior thereof (column 3, lines 13-21) and this teaching is directly contrary to the teaching of the present invention, wherein only the exterior of the wood is heated. Thus, appellant submits that any attempt to use the teachings of the Gard patent to heat only the exterior of the Aylsworth's article is wholly inconceivable, and is in direct contradiction to the specific teachings of the Gard process.

The Taylor patent admittedly does teach that the ends of logs may be heated, for a few seconds, to a temperature higher than that of the melted paraffin which is to be applied thereto. Since, as aforementioned, melted paraffin has a temperature of approximately 149° F, the heating time and temperature taught by Taylor could broadly be considered anticipatory of the heating step claimed in the present application. However, the heating step forms just one portion of the novel aspects of the present invention, and an equally important feature of the present invention is that the coating material which is applied to the heated surface is cool or unheated, and is preferably maintained at room temperature. Naturally, the melted paraffin of the Taylor patent, which has a temperature of 149° F can hardly be considered as being an unheated coating material.

In drafting the claims presently under Final Rejection in this application, it was decided not to use the terms "unheated" or "maintained at room temperature" to describe the characteristics of the coating material, since such terms are, at best, relative terms which are capable of varying interpretations. Therefore, the claims were drafted to specifically require that the temperature of the coating material or lacquer which is applied be so correlated with the time and intensity of the heating of the surface of the wood, that when the lacquer is applied, "the temperature of the surface of the article will immediately drop by at least 50° F". *There is no teaching whatsoever to this effect in the Taylor patent, and on the contrary, the*

teachings of Taylor are in direct opposition thereto. Taylor specifically states that the purpose for heating the ends of his wood is so that the molten paraffin will "*not become chilled by contact with the wood*". Indeed, if the paraffin is not chilled when it contacts the wood, it is impossible to produce the 50° F or more temperature drop specified in the claims on Appeal.

Summarizing the foregoing discussion of the prior art and the Examiner's obvious errors in application thereof, it will be seen that both the Aylsworth and Gard patents teach heating for extended durations of time to produce a uniform heating throughout the wooden article. These teachings are in direct opposition to the present application which teaches that the heat is to be applied for only a short time to produce a superficial or surface heating of the wooden article. The Taylor patent teaches that the wood is to be heated and that molten paraffin is to be applied thereto, and that the temperature of the wood heating is to be sufficient to prevent chilling of the molten paraffin. This again is directly contrary to the teachings of the present invention, which require that the temperature of the lacquer be so correlated with the temperature of the surface being heated, that an application of the lacquer to the heated surface will produce a temperature drop of at least 50° F.

All of these distinctions between the present invention and the prior art, and all of the shortcomings in the prior art are apparent from even a cursory review of the same. Yet the Examiner persists in his rejection without even suggesting any rational basis for the combination of references which he utilizes. Instead, he merely relies upon Aylsworth as teaching a temperature within the range of that to which the surface of the article of the present invention is heated, he relies on Taylor as teaching a time within the range of times utilized for heating the surface of the wood in the present invention, and he relies on Gard

by placing great emphasis upon a paragraph which broadly alludes to "localized" heating. The error of the Examiner in considering the references in this manner is manifest, but for the record, appellant will again state that his invention does not reside in a particular time range or in a particular temperature range, but instead, resides in a novel series of steps to produce a new and unexpected result. The Examiner has completely overlooked the novel series of steps and the whole concept of the present invention, and instead, has directed his attention toward anticipating specific values of time and temperature, as specified in the claims. A rejection of this type is patently improper.

The Applicable Law

It is settled law that references cannot be combined when there is no teaching in either of the references to suggest the combination thereof. *In re Hortman*, 121 USPQ 218 (1959). Moreover, where the prior art does not fairly teach the concept of the invention or the manner in which the invention advances the art, it is improper to combine references by taking a portion from each such reference and, through hindsight, using applicants' disclosure to suggest the combination of references. *In re Ratti*, 123 USPQ 349 (1959).

Still further, and of perhaps greater significance, appellant submits that the law *expressly forbids* an Examiner to attempt to modify a reference in direct contradiction to the teachings of the reference. *Ex parte Garrett*, 132 USPQ 514 (1962); *Ex parte Forsyth*, 138 USPQ 260 (1963). In the present instance, the Examiner attempts to use the Aylsworth and Gard patents to show a surface or superficial heating, despite the fact that the specific teachings of these patents are directed to a uniform heating throughout the article. Similarly, he attempts to use the Taylor patent to show a temperature equalization reaction producing at least 50° F drop when the coating material is applied to the surface of the wooden article, despite the

fact that the specific teachings of the Taylor patent are directed to producing no chilling effect whatsoever on the coating material.

It can thus be seen that the Examiner's attempted combination of references is improper and is not permitted by law, yet even if such a combination were, for argument's sake, permissible, it would still fail to anticipate the novel structure set forth in the claims on Appeal. *In re Hortman, supra.*

Summary and Conclusion

For the reasons set forth hereinabove, appellant submits that the claims on Appeal are patentable over the prior art, and that the Final Rejection by the Examiner is both factually and legally inapplicable. Therefore, appellant prays that this Honorable Board reverse the erroneous decision of the Primary Examiner and indicate claims 9, 10 and 11 to be allowable. An oral hearing in this matter is respectfully requested.

Respectfully submitted,

DONALD A. KAUL

Donald A. Kaul

Attorney for Appellant

Plaintiff's Exhibit 2
LABORATORY REPORTS

This is a report on tests carried out in the days between May 16th and 27th 1966 at the Helectrok Laboratory, at Vibevej 31, Copenhagen N. V. by Helge E. Levring, Odd Greager and O. J. Hansen.

Equipment used for testing:

- A. Conveyorized thermostatically controlled radiant Heat-ovens.
- B. Conveyorized Curtain-Coater.
- C. Balance.
- D. Electronic Recorder.
- E. Micro Thermocouples.
- F. DIN No. 4 cup.
- G. Stop-watches.
- H. Ordinary laboratory accessories.

Materials used for tests:

- a. Solid boards.
- b. Laminated boards.
- c. "Built-up" boards.

Finishes used for tests:

- a. Nitrocellulose, clear.
- β. Cellulose modified urea-alkyd resin, clear lacquer.

Description of Equipment:

- A. The ovens are of the type Helectrok A 3-07. The intensity of radiation is variable from 0-25 kW/m² adjustable by setting of the electronically controlled temperature of the radiators, variable from room-temperature to 600° C.

- B. The curtain-coater, built by Helectrok, for laboratory use, is a miniature copy of curtain-coaters as used in the industry. The machine is capable of applying finishes in amounts varying from 40 to 300 g/m² within limits of $\pm 2,5\%$. The temperature of the finishes recirculated through the pump-system can be kept constant by a thermostatically controlled heat-and-cooling system in the recipient.
- C. The balance used is of SWISS origin: METTLER K 7. Accuracy ± 10 mg. ($\pm 0,01$ g).
- D. The electronic recorder SERVOGOR, type RE 511 produced by C.P. GOERTZ records on graphs the temperature of brazed micro-thermocouples in relation to time.
- E. The micro-thermocouples are brazed Fe-Konst. DEGUSSA lead 0,2 mm ϕ , planished at the tip to 0,07 mm giving immediate respond to actual temperature of the close bounding surroundings of the tip.

Datas of Material used for tests:

Categories a and b were delivered by A/S Junckers Savværk, Køge, Denmark.

- a. Beech-flooring is produced of solid boards. The dimension of which are 129 mm x 3800 mm at a thickness of 22 mm.
- b. Oak-flooring is produced as laminated boards with two layers of pine and one toplayer of oak. The dimensions of the boards are 113,5 mm x 3600 mm at a thickness of:

pine:	17 mm	and
oak:	05 mm	
<hr/>		
total:	22 mm.	

As the test-equipment at the laboratory does not allow for samples larger than 100 mm x 300 mm, 25 pieces of each

category were cut out in accordance with these dimensions by Junckers and immediately afterwards wrapped up in polyethylene-foil to avoid alteration of the moisture content. The moisture content was declared to be 6,5 - 8%. Immediately before tests were carried out in the laboratory, the moisture content was controlled by us. It showed a variation between 6,7 - 7,6%. The samples were delivered to us on May 20th 1966.

- c. The "built-up" boards are pieces cut out of a flush-door produced by Jutlandia A/S, door manufacturers in Jutland, Denmark. The door was delivered to De danske Sprængstoffabrikker A/S, a Danish paint-producer and immediately cut into pieces of the dimension 100 mm x 300 mm. The pieces were delivered to us immediately thereafter on May 20th. The doors are produced of framework of Spruce, lined on both sides with hard-board, veneered with Sapele, with interior cores made from hardboard-strips.

Datas on finishes used for tests:

- a. *Clear nitrocellulose*, was delivered on May 18th 1966 under the number 3017 from De danske Sprængstoffabrikker A/S, Denmark. This finish is commonly used on furniture. The solid content at delivery was 30,5%, the viscosity 140 seconds measured in DIN cup No. 4. For use in the curtain-coater the finish was thinned with cellulose-thinner Lynol to a viscosity of 45 seconds, measured in DIN cup No. 4.
- β. *Cellulose modified urea-alkyd resin*. This catalysed material is produced by A/S Junckers Savværk under the mark BLITSA 933 and is used in their finishing-line for floor-boards.

By delivery it holds a viscosity of 48 seconds, measured in DIN cup No. 4 by 20° C and has a solid content of 33%.

On May 20th 1966 we received a 5 liter sample together with Butylacetate for thinning. The viscosity was measured in our laboratory and found to be 49 seconds, measured in DIN cup No. 4, but by 18° C, which is practically in accordance with A/S Junckers Savværk's declaration.

Determination on the conception of deep heating of wood as contrasted to superficial heating of wood:

To determine the conception of deep heating as contrasted to superficial heating the following basic tests were carried out on samples AP 1 & AP 2.

Deep heating:

Sample AP 1.:

A 22 mm thick piece of board of beech marked AP 1 was thoroughly heated to a temperature of 120° C, the surface of this not to exceed this temperature.

Microcouples were used, connected up to the electronic recorder to determine the intensity of radiation and time necessary to obtain this result. One micro-couple was placed on the surface and another in the middle of the board inserted through a 1,4 mm ϕ and 30 mm deep hole drilled 10 mm below the surface parallel to this. Then the board was placed in the oven. The temperature was recorded on the graph AP 1 (enclosed) in relation to time and the intensity in the oven was so adjusted that the surface-temperature did not exceed 121° C.

After 63 min. conditions were practically stable with a surface-temperature of 120° C and an interior-temperature of 108° C. 2 seconds after termination of heat-exposure the surface-temperature dropped to 112° C i.e. 4° C above the interior temperature of 108° C.

At this stage 85 g/m² Blitsa 933 at a temperature of 19.2° C and a viscosity of 47 seconds in DIN cup No. 4 was applied whereby the surface-temperature suddenly dropped to 90° C. In the course of 10 seconds the temperature, however, rose again to 96° C i.e. 16° C below the surface-temperature at the time of application. The interior temperature of the board was checked and found at this time to be still 108° C. A continuously slow drop then followed over a period of 5 min. where the difference between interior- and surface temperature was constantly 19° C. This difference, however, was leveled out in the course of the next 30 min., until both temperatures had reached a level of 35° C.

The result of coating and curing the catalysed synthetic finish under these conditions can be observed on sample AP 1. The flow is very poor and due to uncontrolled long-term heat-exposure arriving from the interior of the board the film is more or less damaged.

Moisture-content:

The sample was weighted before and after treatment as described above. Considering the weight of the cured film applied, the sample had lost 1.6% of its original weight or 23% of its moisture content.

Superficial heating:

Sample AP 2.:

To follow the change of temperature of the surface, a thermo-couple was placed on the surface of a similar piece of board of beech marked AP 2 as previously described.

Over a period of 30 seconds the board with the thermo-couple attached was placed in the oven, adjusted to a high intensity (corresponding to a temperature of radiation of 530° C). Graph AP 2 shows the record.

A surface-temperature of 160° C was obtained. 1½ seconds after termination of the heat-exposure, in which a drop of temperature took place from 160 to 146° C, 85 g/m² Blitsa 933 with a viscosity of 48 seconds in DIN cup No. 4 at a temperature of 19,3° C was applied, whereby further drop in temperature was caused from 146° C to 102° C i.e. a drop of 44° C. In the first second and a half after application the temperature, however, rose by 2° C whereafter it dropped as shown on the graph. After a total time of 70 seconds i.e. 40 seconds after application the finish was dry. After further 12 min. the temperature of the surface was down to 30° C.

The result of coating and curing the catalysed synthetic finish under these conditions can be observed on sample AP 2. The flow is perfect and the film has dried rapidly without any defects such as bubbles and blisters.

Moisture-content:

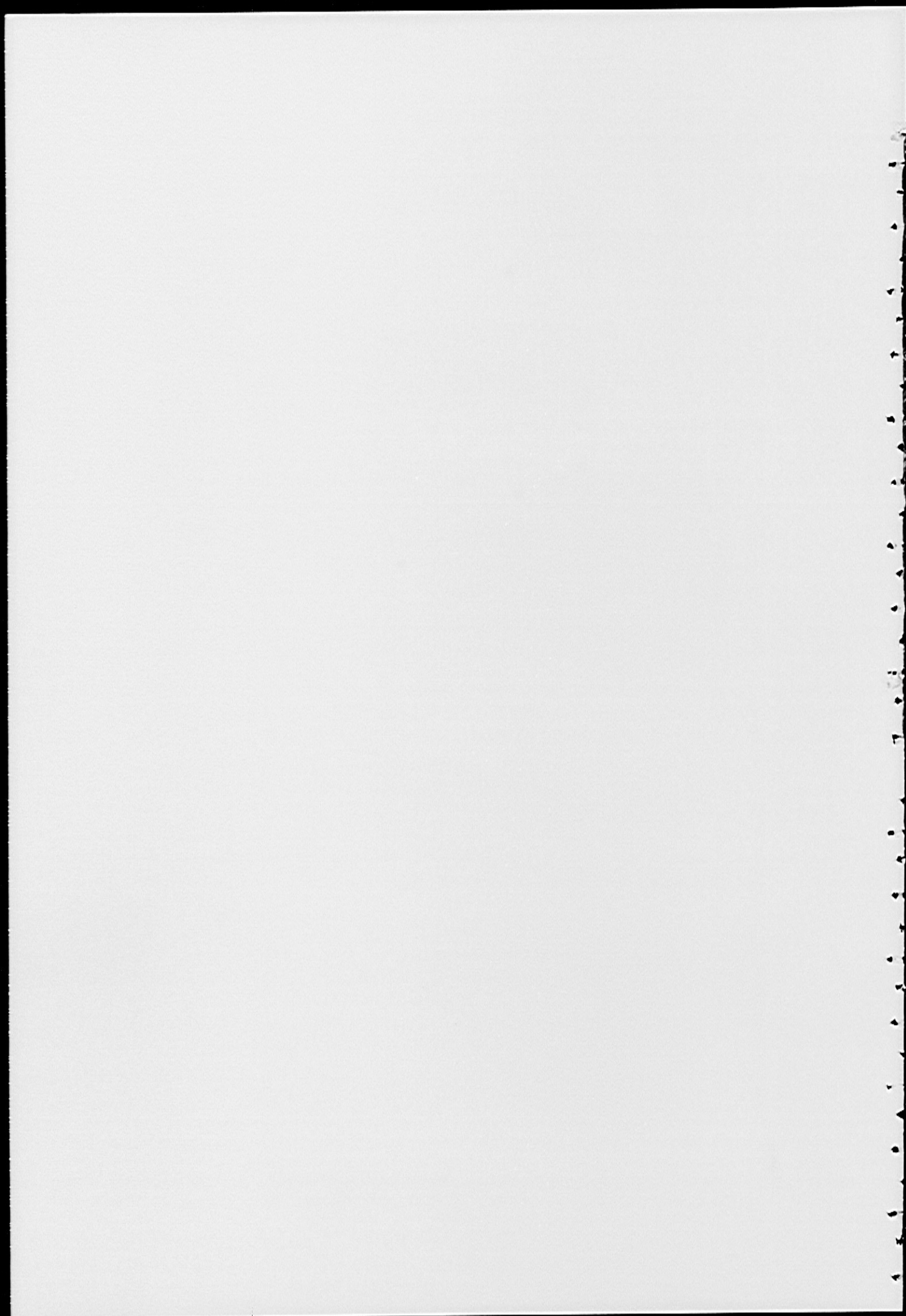
The sample was weighted before and after treatment as described above. Considering the weight of the cured film applied, the sample had lost 0,1% of its original weight or 1,4% of its moisture content.

Copenhagen, June 3rd, 1966.

HELGE E. LEVRING
Helge E. Levring
M.Sc.

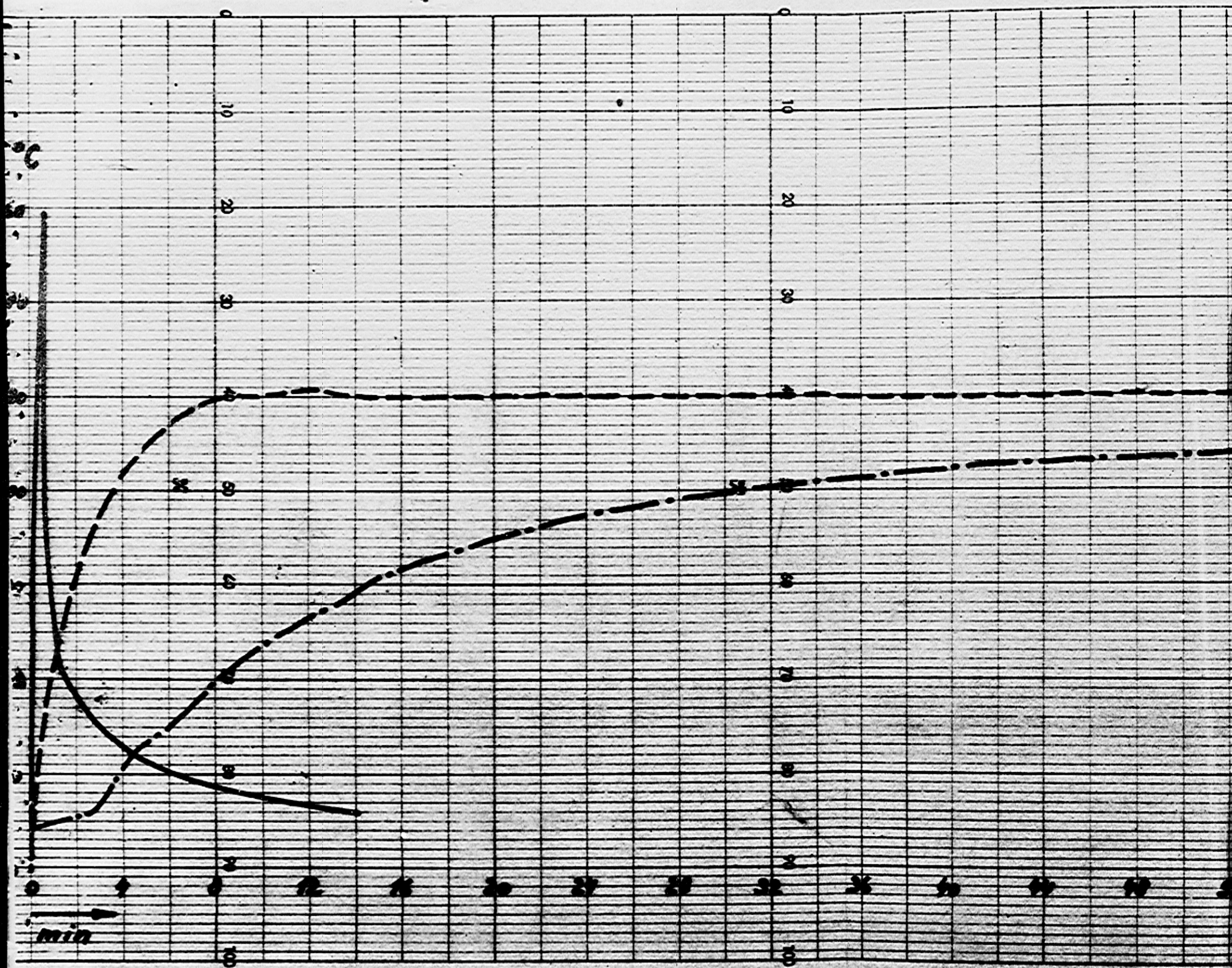
ODD GREAKER
Odd Greaker
Leader of the lab.

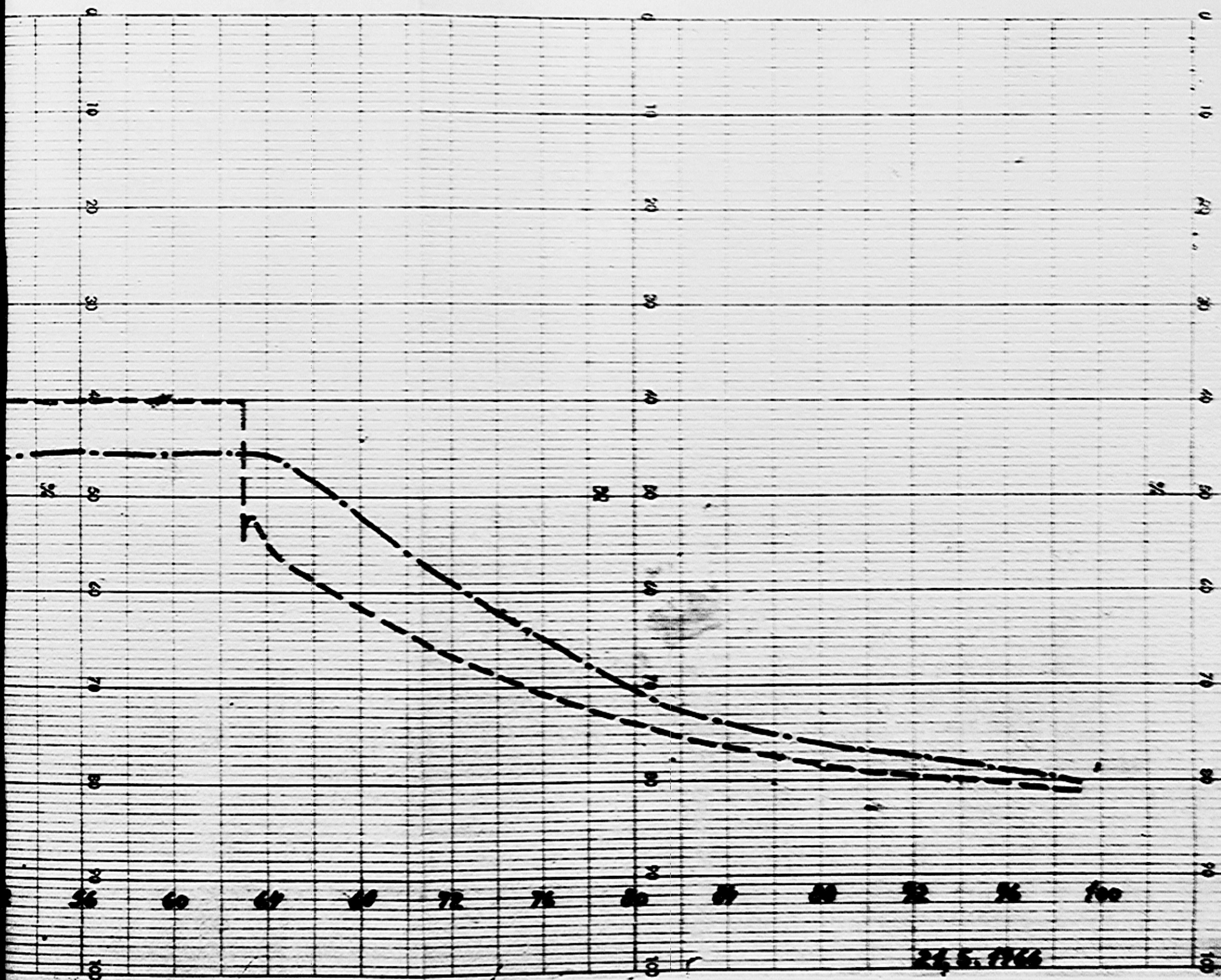
OLE J. HANSEN
Ole J. Hansen
M.Sc.



The two tests AP 1 resp. AP 2 referred to above are listed below together with a further number of tests.

Sample Number.	Material.	Finish.	Viscosity and temp. of finish.	$\frac{g}{m^2}$ app.	Preheat-time.	Peak Temperature.	Total Curing Times.	Result.
AP 1	Beech (a)	Blitsa 933 (β)	47" 19, 2 °C	85	63 min.	122 °C.	63, 33 min.	Poor.
AP 2	Beech (a)	Blitsa 933 (β)	48" 19, 3 °C	85	30 secs.	160 °C.	1, 17 min.	Good.
AP 3	Oak (b)	Nitro-cellulose (c) 3017	55" 20 °C	90	40 min.	120 °C.	40, 33 min.	Poor.
AP 4	Oak (b)	"	57" 20 °C	90	30 secs.	160 °C.	1, 00 min.	Good.
AP 5	Oak (b)	"	57" 20 °C	90	None	22 °C.	10, 00 min.	Poor.
AP 6	Sapele (c)	"	57" 20 °C	90	None	22 °C.	10, 00 min.	Poor.
AP 7	Beech (a)	Blitsa 933 (β)	50" 17 °C	85	40 min.	122 °C.	40, 33 min.	Poor.
AP 8	Beech (a)	Blitsa 933 (β)	50" 17 °C	85	30 secs.	160 °C.	1, 17 min.	Good.
AP 9	Oak (b)	Blitsa 933 (β)	47" 18 °C	85	40 min.	122 °C.	40, 33 min.	Poor.
AP 10	Sapele (c)	Blitsa 933 (β)	48" 18 °C	85	41 min.	134 °C.	41, 33 min.	Poor.
AP 11	Sapele (c)	Blitsa 933 (β)	47" 18 °C	85	18, 6 secs.	132 °C.	1, 17 min.	Good.





STATEMENT OF QUESTIONS PRESENTED

1. When a District Court is called upon to interpret 35 USC 103 to determine whether a particular invention is "obvious", does it have to apply the same legal tests regardless of whether the suit before it is one to obtain a patent on the invention or one challenging the validity of a patent already issued on the invention? Appellant says YES. [The same statutory provision applies in both instances]

2. Did the District Court in this case apply the "obviousness" tests of *Graham v. John Deere*, and if it did, were the tests applied correctly? Appellant says NO.

3. Where substantial new evidence, not previously presented to the Patent Office, was adduced at the trial under 35 USC 145, did the District Court err in merely re-adopting the Patent Office findings as its own without considering how such new evidence affected the foundation of the Patent Office findings? Appellant says YES.

4. Did the District Court err in its analysis of the legal requirements of the claims on appeal? Appellant says YES.

5. Did the District Court err in holding that the differences between the prior art and the subject matter of Appellant's invention, as set forth in the claims on appeal, would have been obvious to a person having ordinary skill in the art at the time the claimed subject matter was devised? Appellant says YES.

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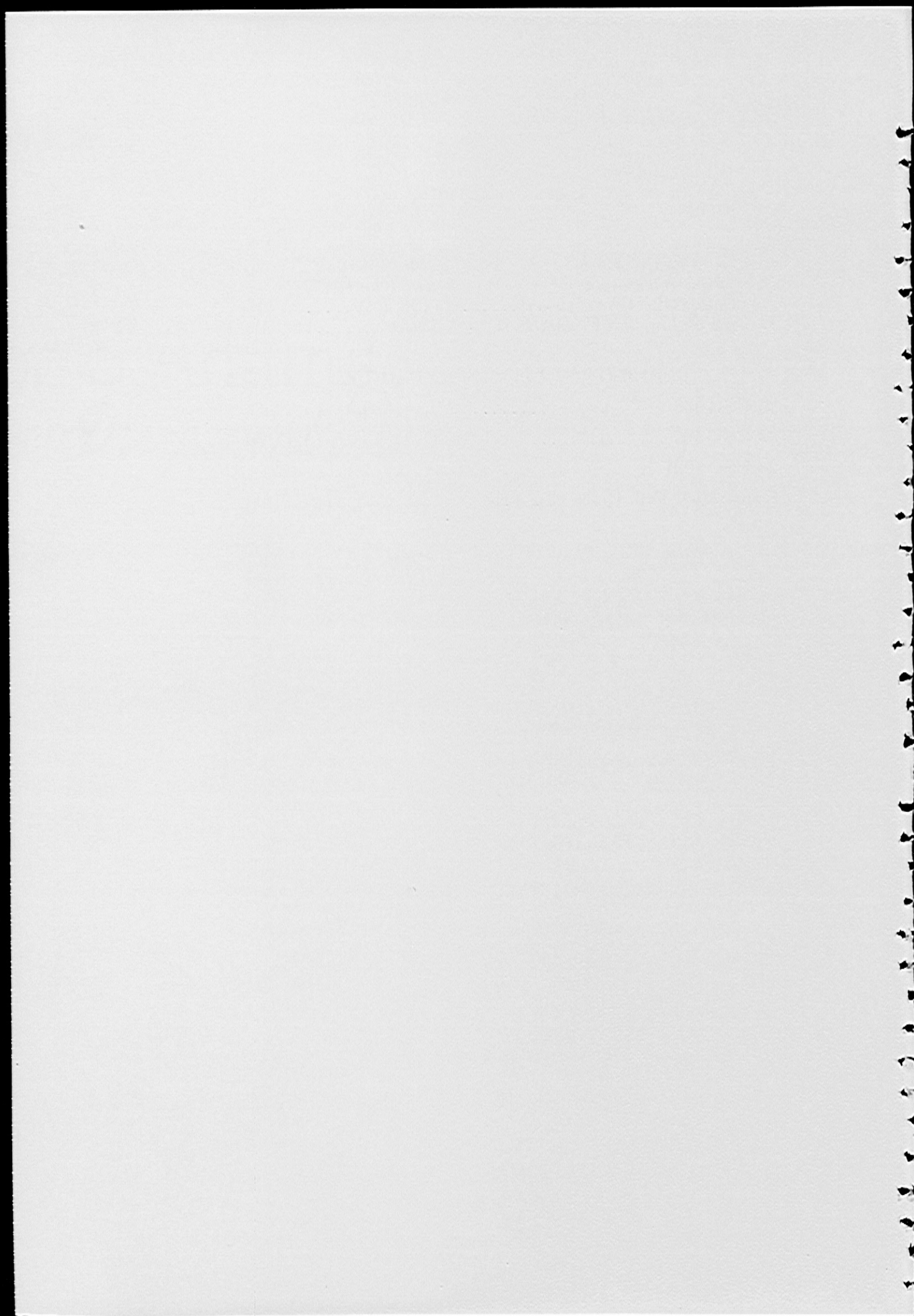
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IN THE
United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Appeal No. 20884

HELGE ERIK LEVRING, *Plaintiff-Appellant*,

v.

EDWARD J. BRENNER, Commissioner of Patents,
Defendant-Appellee

On Appeal from the United States District Court for the
District of Columbia

BRIEF ON BEHALF OF PLAINTIFF - APPELLANT

JURISDICTIONAL STATEMENT

This case is a Civil Action arising under the patent laws of the United States and was brought in the District Court under Title 35, United States Code, Section 145, to authorize the Defendant-Appellee to issue to Plaintiff-Appellant, a patent on his application Serial No. 671,412, filed July 12, 1957.

The Complaint filed in this suit alleged jurisdiction under the patent laws of the United States and under Title 35, United States Code, Section 145 (JA 3), and the Answer to the Complaint admitted such jurisdiction (JA 6).

On November 10, 1966, the District Court entered a final judgment in favor of Defendant-Appellee (JA 158) and its Finding of Fact No. 1 (JA 153) indicated jurisdiction under 35 USC 145.

Jurisdiction to review the final decision of the District Court is vested in this Court under the provisions of Title 28, United States Code, Section 1291.

STATEMENT OF THE CASE

(1) Brief Statement of the Case

Plaintiff-Appellant brought this Civil Action in the United States District Court under the provisions of 35 USC 145 seeking a judgment authorizing the Defendant-Appellee, the Commissioner of Patents, to issue a patent on Appellant's application Serial No. 671,412, filed July 12, 1957.¹

The trial of the case was held on June 14 and 15, 1966, before Hon. Matthew F. McGuire, then Chief Judge of the United States District Court for the District of Columbia (JA 8, 55). During the trial, substantial new evidence, previously presented to the Patent Office, was introduced to show the novelty, utility and non-obviousness of Appellant's invention.

On November 10, 1966, Judge McGuire entered a memorandum opinion (JA 156-158), Findings of Fact (JA 153-156), Conclusions of Law (JA 156) and a Judgment (JA 158) which, in effect, fully adopted the Patent Office position and the presumptions and findings underlying such

¹ See Complaint, JA 3-6.

position. Such Judgment ordered that the Complaint be dismissed.

Within the time prescribed by law, Plaintiff-Appellant filed his Appeal to this Court (JA 159) which seeks a review and a reversal of the District Court's Judgment.

(2) Full Statement of the Case

The invention at issue relates to a process for applying a surface finish material, such as lacquer, to the surface of a porous material, such as wood.²

The basic nature of the invention and the important aspects thereof were established at the outset of the trial in a colloquy between the Court and counsel for each of the parties (JA 12-13). Such colloquy established the three basic significant advantages of the invention at issue, which can be summarized as follows:

- (a) The invention provides a coating having a highly superior appearance.
- (b) The invention provides a coating process wherein the "moisture balance" of the article being coated is substantially undisturbed.
- (c) The invention provides a surface finishing process which can be carried out extremely rapidly.

Plaintiff initially filed his patent application at issue, Serial No. 671,412, in the United States Patent Office on July 12, 1957,³ and in the original claims of such application (JA 189-190), he clearly and specifically set forth the definition of his invention, defined the manipulative steps involved in his process, and set forth the physical conditions of time and temperature under which such steps were to be performed. The application was then prose-

² Specification of the application, JA 185-188.

³ Admitted in Answer, JA 6, Para. 4.

cuted in the United States Patent Office for several years and eventually, claims 9, 10 and 11 thereof, the sole claims remaining of record in the application, were finally rejected by the Examiner (JA 194-195) and this final rejection was affirmed by the Patent Office Board of Appeals (JA 183-185).

A comparison of the wording of claims 9, 10 and 11, the claims on appeal (JA 4-5 and 199-200) with original claims 1-5 of the application as initially filed in 1957 (JA 189-190), shows that while the wording has been varied to some minor degree, the essential definition of the invention has remained constant.⁴

Treating claim 9 as exemplary of the subject matter on appeal, the invention set forth therein can be broken down in the following manner:

A method of coating the surface of a wooden article with a lacquer finish which comprises:

- (1) superficially heating said article
 - (a) for a period not exceeding 120 seconds
 - (b) to raise the surface temperature thereof to a temperature of between 120° F. and 390° F. and
- (2) immediately thereafter, applying to the surface of said article, a lacquer finish,
 - (a) the time and intensity of the heating
 - (b) and the temperature of which is selected

⁴ Appellant's original definition of his invention, drafted more than 10 years ago, corresponds substantially with the definition contained in the claims on appeal so none of the inventive features can be considered an "afterthought" such as alluded to by the Supreme Court in *Lincoln Engineering Co. v. Stewart-Warner Corp.*, 303 U.S. 545, or *Graham v. John Deere Co.*, 383 U.S. 1.

- (c) so that upon the application of the lacquer to the surface of the article, the temperature of the surface of the article will immediately drop by at least 50° F.

The Examiner in his final rejection (JA 194-195) and the Board of Appeals in its decision (JA 183-185), held that the subject matter of claims 9 through 11 of the patent application would have been "obvious" under 35 USC 103, to a person having ordinary skill in the art to which the process pertains, at the time that Plaintiff-Appellant made his invention. More specifically, the Examiner and the Patent Office Board of Appeals held that a person having ordinary skill in the art could have arrived at Plaintiff-Appellant's process by combining the teachings of the Aylsworth, Taylor and Gard patents.⁵

At the trial of this cause, Plaintiff-Appellant himself testified as an expert witness in the art of surface finishing (JA 17, 18) and as both inventor and expert, he presented testimony and physical evidence. He testified as to conditions in the industry prior to the time of his invention (JA 19, 20) and as to how his invention departed from such conditions. For example, prior to 1957, when Plaintiff-Appellant made his invention, the industry was using post-heating techniques (JA 19, 20, 85), but Appellant developed a *PRE-HEATING* technique. The industry and the prior art used methods which required several *hours* to perform whereas Appellant developed a process which could be carried in a matter of *SECONDS* (JA 89, 90). The industry used methods requiring *deep-heating* of the article being finished and Appellant developed a process

⁵ The rejection was actually based on a combination of five patents, which also included Carter 1,140,873 (JA 164-168) and Hofmann 1,574,890 (JA 175-177), each cited to show the cooling step appearing in claim 10. Appellant has consistently *admitted* that this step is old and well-known, so the basic combination of references involved is Aylsworth 1,139,470 (JA 161-163), Gard 2,631,109 (JA 169-174) and Taylor 1,435,031 (JA 178).

which required only *SUPERFICIAL HEATING* (JA 31, 32). The industry and the prior art taught that the articles to be finished were to be thoroughly *dried out to remove the moisture content*, whereas Appellant developed a process which *LEFT THE MOISTURE CONTENT SUBSTANTIALLY UNALTERED AND UNCHANGED* (JA 43, 44, 90). IN OTHER WORDS, PLAINTIFF-APPELLANT DEVELOPED HIS INVENTION BY APPROACHING THE PROBLEM *OPPOSITELY* TO THE INDUSTRY PRACTICES AT THAT TIME AND *OPPOSITELY* TO THE SUGGESTIONS OF THE PRIOR ART. In doing so, Plaintiff developed his new, useful and unobvious process as set forth in claims 9 through 11 on appeal.

At the trial, the Plaintiff further presented a detailed test report (JA 212-220) and various physical test specimens showing different types of woods and different types of finishes. These tests were conducted to show the contrast between a "deep-heating" operation, as taught by the prior art, and a superficial heating operation, as taught by Plaintiff's invention. The results of such tests established that:

- (a) The prior deep-heating techniques consistently produced a finish having a *POOR* appearance which was commercially unacceptable while the superficial heating techniques of Appellant's invention produced a finish having a *GOOD* appearance which was commercially acceptable. (JA 43, 44, 219).
- (b) The prior art deep-heating technique caused the samples to lose about 25% of their moisture content while the superficial heating technique of Appellant caused the samples to lose only about 1½% of their moisture content (JA 44).
- (c) The prior art deep-heating techniques required heating time of 40 to 60 minutes while Appellant's

superficial heating technique required heating times of only about 30 seconds. (JA 44, 220).

Finally, Appellant testified at the trial as to how his invention was being used on a commercial basis in a great many countries (JA 45), how he had obtained a great many foreign patents on such invention (JA 46, 70-72, 74), and he had realized APPROXIMATELY \$1,000,000 FROM THIS INVENTION (JA 50, 51) from countries outside the United States.

Another witness presented at the trial of this case was Mr. Sydney Taylor, of Porter Paints, the largest paint company in Great Britain (JA 82, 83). Mr. Taylor was qualified as an expert witness in the art of surface finishing (JA 84) and he testified that his company had acquired rights in the invention for Great Britain alone at a cost of *approximately* \$400,000 (JA 88). His company's decision in purchasing British rights to the process was not a hasty action (JA 86), but instead, was only undertaken after one year of investigation by the company's technical staff and its patent staff (JA 88). Mr. Taylor's company's 22 man patent department conducted an investigation to determine whether Appellant's invention could be invalidated by the prior art, while simultaneously, Mr. Taylor and skilled laboratory technicians conducted various tests to determine whether the operating limits of the patent claims could be circumvented (JA 86-88). After all of the investigation, Mr. Taylor's company decided that the invention was indeed a valuable one, could not be circumvented or invalidated, and was worth nearly \$400,000 (JA 88, 89). Mr. Taylor further testified as to how Appellant's process has been continuously utilized by his company and has been sub-licensed to many other companies in Great Britain. (JA 90, 91).

The final witness at the trial was Mr. Uffe Jensen, of Junkers Sawmill in Denmark, the largest manufacturer of

parquet floors in Europe (JA 134). Mr. Jensen was qualified as an expert witness (JA 133-135) and he testified as to how his company had initially considered both Appellant's process and a post-heating process (JA 135), the only other process commercially available at that time. After comparing the relative advantages of the two processes, Mr. Jensen's company adopted Appellant's process (JA 136, 137) and from a small beginning operation thereunder, Mr. Jensen's company now utilizes Appellant's process in 99% of its operations (JA 137). Mr. Jensen further testified as to how commercially valuable Appellant's process proved to be in his company's operations (JA 137), and as to how his company had over the years received a great many visitors, most of whom were people highly skilled in the art of surface finishing, and how such visitors had expressed amazement upon viewing Appellant's process in operation (JA 138, 139).

Insofar as the prior art, all of the witnesses who testified at the trial (Messrs. Levring, Taylor and Jensen), who were all fully qualified as experts in the art of surface finishing, testified it would not have been "obvious" to combine the teachings of the Aylsworth, Taylor and Gard patents (JA 76-78, 106, 139). In fact, each witness testified that such a combination would have been contrary to the very teachings of the patents themselves. On cross-examination, Defendant-Appellee repeatedly, though unsuccessfully, attempted to elicit from the witnesses testimony which would establish that the Aylsworth, Taylor and Gard patents could somehow be combined to produce the claimed process, and that their combination would be "obvious" under 35 USC 103 to one of ordinary skill in the art of surface finishing. However, each of the witnesses, who were all highly skilled in the art, testified that such patents could not be combined at all, and that their combination certainly could not be considered "obvious" (e.g., JA 106, 139).

The Court in its memorandum opinion (JA 157-158) set forth the basic facts and then disposed of the entire case in the following paragraph:

"The Court concludes in the circumstances and on the evidence that the results obtained by the Plaintiff, as set forth in the claims in question, are the product of mere routinization, would be obvious to one reasonably skilled in the art and as a consequence do not rise to the dignity of invention."

The Court then proceeded to adopt as its own, the Patent Office's proposed Findings of Fact and Conclusions of Law (JA 153-156) and entered a Judgment dismissing the Complaint (JA 158).

STATUTES AND RULES INVOLVED

While 35 USC 145 forms the jurisdictional basis upon which relief is sought, it is not considered necessary to discuss this Statute in any detail since both of the parties agree that jurisdiction under the Statute is proper (JA 3, 6), and the Court so held (JA 153).

The primary Statute for the Court's consideration in this case is 35 USC 103 which states:

"A patent may not be obtained though the invention is not identically disclosed or described as set forth in Section 102 of this Title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

This Court's review of the Findings of Fact made by the District Court (JA 153-155) is governed by Rule 52(a) of the Federal Rules of Civil Procedure which states, in pertinent part, that such findings "shall not be set aside unless clearly erroneous".

STATEMENT OF POINTS

1. The District Court erred in its analysis and application of the Supreme Court case of *Graham v. John Deere Co.*, 383 U.S. 1.
2. The District Court erred in its analysis and application of 35 USC 103.
3. The District Court in this case was required to apply the "obviousness" tests set forth by the Supreme Court in *Graham v. John Deere Co.*, and erred in either failing to do so, or in doing so incorrectly.
4. The District Court erred in merely re-adopting the Patent Office findings as its own without considering how the substantial quantity of new evidence presented at the trial affected the very foundation upon which the Patent Office findings were based.
5. The District Court erred in its analysis of the legal requirements of the claims on appeal by holding that the feature of "moisture balance" constituted a "limitation" which should have been or could have been set forth in the claims on appeal, since this feature is a *result* of the claimed method steps rather than a positive manipulative step.
6. The District Court erred in its analysis of the legal requirements of the claims on appeal by holding that the claims "do not preclude the use of thoroughly dry wood", since it is not the function of the claims to "preclude" anything.
7. The District Court erred in holding that the moisture balance aspects of Plaintiff-Appellant's invention are not described in the specification of his patent application.
8. The District Court erred in holding that Plaintiff-Appellant's use of the term "coating" does not differ from the term "impregnating".

9. The District Court erred in failing to note the Patent Office's errors in analyzing the Aylsworth, Taylor and Gard patents.

10. The District Court erred in holding that Plaintiff-Appellant's claims 9 and 11 distinguish from the Aylsworth patent only in the length of time of heating and the specific temperature drop of the surface of the article when coated.

11. The District Court erred in holding that it would be obvious for the worker of ordinary skill in the art to modify the process of the Aylsworth patent by superficially heating the wooden article for just a few seconds at a temperature high enough to insure a surface temperature drop of at least 50° F. upon application of the lacquer thereto.

12. The District Court erred in holding that the differences between the subject matter of claims 9, 10 and 11 of the application in suit and the prior art are such that the subject matter as a whole would have been obvious at the time the claimed subject matter was devised to a person having ordinary skill in the art of coating porous materials.

13. The District Court erred in concluding that Plaintiff-Appellant is not entitled to a patent containing claims 9, 10 and 11 of his application Serial No. 671,412 and in dismissing his Complaint.

14. The Judgment of the District Court is not supported by the evidence.

SUMMARY OF THE ARGUMENT

1. In the recent cases of *Graham v. John Deere Co.*, 383 U.S. 1, (1966), the Supreme Court made its first interpretation of Section 103 of the Patent Act since that Section was adopted in 1952. In its decision, the Supreme Court indicate that Section 103 "lends itself to several basic factual inquiries" and went on to establish what

these "inquiries" should be and how the "tests" of obviousness should be applied.

2. The District Court in this case, and in any case under 35 USC 145, is required to apply the Supreme Court's "obviousness" tests as set forth in the *Graham v. John Deere* cases, in the same manner as would a District Court in a patent infringement suit. Thus, while it may be stated that the Patent Office decision is entitled to a "presumption of correctness", this "presumption" is no greater or no less than the "presumption of validity" which a District Court judge is faced with in a patent infringement suit. Each "presumption" can be weakened or negated under certain circumstances and the Court thus cannot rely on the "presumption" alone, but instead, must apply the proper legal "tests" to determine whether obviousness is present.

3. The District Court in this case failed to apply the proper obviousness "tests", failed to discuss or give weight to the substantial quantity of new evidence adduced at the trial, despite the fact that such evidence had not previously been presented to the Patent Office, and instead merely adopted the Patent Office findings as its own. This would be improper under any circumstances, but it is particularly improper in this instance where the trial established that the Patent Office findings were themselves inaccurate and erroneous.

4. If the District Court had applied the proper "tests" of obviousness, it would have found that under each applicable test, Appellant's invention was non-obvious and hence Appellant's patent cannot properly be denied under 35 USC 103.

5. It is established law that the claims for a process invention need only set forth the manipulative steps involved and the conditions under which such steps are performed. The claims need not "exclude" materials which

are useless to the process nor need they set forth as a "limitation", the advantages or results achieved by the process. Thus, the District Court erred in its analysis of the legal requirements of the claims on appeal by finding that the claims did not "preclude" thoroughly dry wood (a material useless to the process at issue) and by findings that the feature of "moisture balance" (a result achieved by the process) constituted a "limitation" which could or should be included in the claims.

ARGUMENT

A. The Supreme Court Has Now Established the "Tests" to be Applied in Considering Whether an Invention Is "Obvious" Under 35 USC 103

In the case of *Graham et al. v. John Deere Co. et al.*, 383 U.S. 1 (1966), the Supreme Court considered, for the first time, the provisions of Section 103 of the Patent Act (35 USC 103). The Court indicated that under the 1952 Patent Act "the Congress has for the first time expressly added a third statutory dimension to the two requirements of novelty and utility that had been the sole statutory test since the Patent Act of 1793. This is the test of obviousness".

Prior to the Supreme Court decision, this Court and all other Federal Courts throughout the United States had developed a body of decisional law interpreting the provisions of 35 USC 103 and such interpretations often varied from Court to Court and Circuit to Circuit.

However, in the *Graham* case, the Supreme Court stated that a determination of obviousness under Sec. 103 "lends itself to several basic factual inquiries" and it set forth these inquiries as follows (pp. 17-18):

"Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art re-

solved. Against this background, the obviousness or nonobviousness of the subject matter is to be determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy. See Note, Subtests of "Nonobviousness", 112 U. Pa. L. Rev. 1169 (1964)."

The University of Pennsylvania Law Review article, referred to by the Supreme Court, mentions as "subtests" the factors of long felt demand, commercial success, commercial acquiescence, lack of a simultaneous solution and professional approval.

It is thus clear that the *TESTS* established by the *Graham* case for determining "obviousness" under 35 USC 103, are as follows:

1. Scope and content of the prior art.
2. Differences between prior art and the claims at issue.
3. Level of ordinary skill in the art.
4. Long felt demand for the invention.
5. Commercial success of the invention.
6. Commercial acquiescence of others in the value and validity of the invention.
7. Lack of a simultaneous solution to the problems solved by the invention.
8. Professional approval of the invention.

B. These Obviousness "Tests" Must Be Applied by the District Court in a Case Under 35 USC 145 in the Same Manner as They Would Be Applied in a Patent Infringement Case, Despite Any Difference in "Presumptions"

It is, of course, recognized that the Supreme Court in the *Graham* case was considering a patent infringement case and not a case involving a suit to obtain a patent. It is, however, submitted that the District Court in a suit under 35 USC 145 is required to apply these obviousness "tests" to the invention before it, just as a District Court in a patent infringement case must apply the obviousness "tests" to the patented invention before it. *IN EITHER CASE, THERE IS ONLY ONE STATUTORY PROVISION INVOLVED—NAMELY, 35 USC 103.*

Appellant recognizes, of course, that the so-called "presumptions" are different in a case under 35 USC 145 than they are in a patent infringement case. As this Court stated in *Magnaflux Corp. v. Coe*, 78 U.S. App. D.C. 258, 139 F. 2d 531 (1943):

"In a suit to obtain a patent the presumption of administrative and judicial correctness runs against the rejected claims, while in an infringement suit the presumption of administrative correctness runs in favor of the issued patent."

In an infringement suit, the Statute itself (35 USC 282) states that the patent shall be "presumed valid". This "presumption" is strengthened when the most pertinent prior art has been considered by the Patent Office, *Schnell v. Allbright-Nell Co.*, 348 F. 2d 444 (CA 7, 1965); *Arnold Pipe Rentals Co. v. Engineering Enterprises, Inc.*, 350 F. 2d 885 (CA 5, 1965), or where the claims were allowed by the Patent Office Board of Appeals, *U.S. Pipe and Foundry Co. v. Woodward Iron Co.*, 327 F. 2d 242 (CA 4, 1964), or where the claims were allowed by the Court of Customs and Patent Appeals, *Guiberson Corp. v. Equipment Engineers, Inc.*, 252 F. 2d 431 (CA 5, 1958), or where

the claims were allowed after an interference, *Anderson Co. v. Trico Products Corp.*, 162 F. Supp. 224 (D.C. WNY 1958), reversed on other grounds 267 F. 2d 700 (CA 2 1959), or where a District Court has concurred in the allowability of the claims, *Farr Co. v. American Air Filter Co., Inc.*, 318 F. 2d 500 (CA 9, 1963). On the other hand, this "presumption" is weakened where the most pertinent prior art has not been considered by the Examiner. *M. B. Skinner Co. v. Continental Industries, Inc.*, 346 F. 2d 170 (CA 10, 1965); *Monroe Auto Equipment Co. v. Heckethorn Mfg. and Supply Co.*, 332 F. 2d 406 (CA 6, 1964), cert. den. 379 U.S. 888.

In a similar manner, under the announced rules of this Court, there is a "presumption" as to the administrative correctness of the Patent Office in a case under 35 USC 145, *Reynolds v. Agnides*, 123 U.S. App. D.C. . . . , 356 F. 2d 367 (CADC 1966)⁶ but this "presumption" is inapplicable in cases where, at the trial, uncontradicted proof was presented that had not been earlier presented to the Patent Office. *Stradar v. Watson*, 100 U.S. App. D.C. 289, 244 F. 2d 737 (CADC 1957) or where an issue has not been the subject of a Patent Office finding or an assumption underlying the Patent Office finding is demonstrably inaccurate in a material degree, *California Research Corp. v. Ladd*, 123 U.S. App. D.C. 65, 365 F. 2d 813 (CADC 1966).

It should thus be apparent that even if a "presumption" applies in both a patent infringement suit and a suit under 35 USC 145 to obtain a patent, the "presumption" itself cannot be used by the District Court in either instance as a substitute for judicial analysis of the invention before it, since under differing circumstances, the particular "presumption" may be either strengthened or weakened.

⁶ This "presumption" is not present in a review by the Court of Customs and Patent Appeals. *In re Hofstetter*, 362 F. 2d 293 (CCPA 1966).

Instead, Appellant submits that the job of the District Court in either a patent infringement suit or a suit under 35 USC 145, where the issue of "obviousness" under 35 USC 103 is present, is to carefully and analytically apply the various obviousness "tests" set down by the Supreme Court in the *Graham* case.

C. This Court Can and Should Review the Question of Whether the District Court Ever Applied the Proper "Tests" of Obviousness or Whether It Merely Adopted the Patent Office Position Without Ever Applying Such Tests

This Court has made it quite clear that the District Court's finding of "obviousness" is a question of fact and that under the provisions of Rule 52(a) of the Federal Rules of Civil Procedure, the District Court's findings in this regard will not be disturbed unless "clearly erroneous". *Baenitz v. Ladd*, 117 U.S. App. D.C. . . ., 363 F. 2d 969 (CADC 1966). However, Appellant submits that the question of whether the District Court *DID APPLY* the obviousness "tests" set forth by the Supreme Court in the *Graham* case, is a question of law which is open to a full review by this Court. There can be no doubt that Appellant is entitled to have the proper legal rules applied in determining his right to a patent.

It is Appellant's contention that in the present case, the District Court merely issued a memorandum opinion and Findings which adopted the Patent Office position as the Court's own, despite the fact that substantial quantities of new evidence were presented at the trial. In this regard, the District Court's actions seem to closely parallel the actions of the District Court in *Strader v. Watson*, supra, which actions were reversed by this Court. Appellant asserts that the Court in the present case failed to evaluate the new evidence in a proper de novo review and failed to apply the proper "obviousness" tests to Appellant's invention.

Appellant bases this charge on the fact that the Court's memorandum opinion and its Findings of Fact and Conclusions of Law (the Court having adopted the Patent Office's proposed Findings of Fact and Conclusions of Law) failed to even allude to the substantial evidence presented on Appellant's behalf at the trial, or to the underlying errors which the trial established to be present in the Patent Office ruling. For example, the evidence presented at the trial included a series of test specimens, a detailed test report (JA 212-220) and detailed testimony concerning the tests and the results thereof (JA 22-44). This evidence established that the prior art deep-heating techniques produced "*poor*" results, required *in excess of an hour* to perform and radically varied the moisture balance of the article being coated. It also established that, in contrast to the prior art results, the invention at issue consistently produced "*good*" results, required *only a few minutes or less*⁷ to perform, and left the moisture balance of the article being coated substantially unchanged. However, NONE OF THIS EVIDENCE WAS EVEN REFERRED TO IN THE COURT'S OPINION OR FINDINGS, despite the fact that it was all NEW EVIDENCE which had not been presented before the Patent Office.

Additionally, much of the evidence presented at the trial was directed toward showing that the assumptions underlying the Patent Office findings were inaccurate and erroneous, and this Court has specifically held that if the Patent Office findings are "inaccurate in a material degree", no presumption of correctness is available. *California Research Corp. v. Ladd*, supra. Rather than discuss all of the Patent Office errors, Appellant believes his point can be proved merely by referring to one of the patents in-

⁷ See graph at JA 220 for comparison of process times.

volved, namely, Gard patent No. 2,631,109 (JA 169-174). The Patent Office Board of Appeals stated (JA 184-85):

"As shown by column 7, lines 18-21, Gard may localize the heat and impregnate only the heated area. *This is the equivalent of a superficial heating.*" (Emphasis added).

At the trial, each witness testified that because Gard uses a dielectric heating means, it would be *impossible* for his process to achieve a "superficial heating" (JA 78, 98-100, 132), that "localized heat" as disclosed by Gard is *not* "superficial heat" as called for in Appellant's claims (JA 100), and that the Board's finding that localized heat was the "equivalent" of superficial heat was "completely inaccurate" (JA 101). Yet, the District Court's opinion and Findings do not even comment on this error, and instead, merely adopt the Patent Office interpretation of the Gard patent as Finding 3(c) (JA 154).

Another Patent Office error in interpreting the teachings of the Gard patent occurred when the Board of Appeals stated (JA 185):

"The application of the resin to the surface so that its temperature will *drop* at least 50° F is shown by Gard, column 5, lines 14-25". (Emphasis added)

While each claim on appeal does indeed call for a temperature "*drop*" of at least 50°F, it was established at the trial that the Gard patent discloses a temperature "*differential*" of 50°F, not a "*drop*" of 50°F, and that such a temperature "*differential*" would not create the temperature "*drop*" called for in the claims on appeal⁸ (JA 78-79, 123-125). Again, the District Court does not

⁸ As an example, if an article at 200° F. were treated by Appellant's invention, it would instantaneously *drop* to at least 150° F. If such an article was immersed in a cooling bath having a temperature of 150° F., the *differential* between the bath and the article would be 50° F. but the article itself would not instantaneously *drop* to 150° F.

even mention this error and, interestingly enough, while it states in Finding No. 8 (JA 155) that Gard only refers to a "temperature differential", it goes on in Finding No. 9 (JA 155) to conclude that it would be "obvious" to modify the prior art "to insure a surface temperature *drop* of at least 50°F". (Emphasis added).

Other similar errors with respect to the other patents could also be pointed out herein, and additionally, as will be discussed hereinafter, there was considerable additional evidence directed to showing that Appellant's invention met the various "tests" establishing nonobviousness. Yet, the District Court's opinion and Findings *do not* discuss whether Appellant's invention meets the *Graham* case "tests" of non-obviousness and *do not* discuss the various errors present in the Patent Office findings and *do not* consider or discuss the substantial quantity of new evidence presented at the trial.

Instead, it seems perfectly clear that the District Court failed to even apply the proper obviousness "tests", and instead, merely adopted the Patent Office position as its own. Thus, the District Court's opinion and Findings are infected with the same errors which were present in the Patent Office findings on which they are based.

D. If the District Court Had Applied the Proper Obviousness "Tests", and Had Applied Them Correctly, It Would Have Found That Appellant's Invention Is Not "Obvious" Under 35 USC 103

In the foregoing Section C. Appellant agreed that Rule 52(a) governed a review of the District Court's finding of "obviousness", but did not govern the question of whether the proper "tests" of obviousness were ever applied. In this Section, Appellant submits that Rule 52(a) likewise does not apply to a determination of whether, if the District Court did apply the "tests" of obviousness, such tests were applied correctly.

In Section A of the Argument, the eight "tests" of obviousness were set forth, and the trial of this case established that Appellant's invention meets all of the "tests" to establish non-obviousness. As to the "test" of "commercial success", Appellant himself testified at the trial that his income from the invention, at that time, had been nearly ONE MILLION DOLLARS (JA 50, 51). Indeed, the Court itself concluded during the trial that the invention was a commercial success (JA 49-50).

As to the "tests" of "commercial acquiescence of others" and "lack of a simultaneous solution to the problem", one of the witnesses, Mr. Taylor, testified that his company had purchased rights in the British invention for some \$400,000 (JA 88) but before doing so, had conducted a full year's investigation most by the company's laboratory staff and by its 22-man patent department in an endeavor to determine whether the invention could be either circumvented or invalidated (JA 86-88). It was only after concluding that the invention could not be invalidated and could not be successfully circumvented commercially that Mr. Taylor's company adopted the process, which it now uses extensively and sub-licenses extensively to others (JA 89-91). Additionally, Mr. Jensen, representing the largest parquet floor manufacturer in Europe, testified that his company adopted Appellant's invention on a small scale initially, and that it now uses such invention in 99% of its operations (JA 137). Mr. Jensen also testified as to how many persons skilled in the art visited his plant and were "amazed" when they saw the process in operation (JA 138). This failure of others to discover Appellant's process or even to discover a way to avoid such process is, in itself, indicative of invention. *Expanded Metal Co. v. Bradford*, 214 U.S. 366, 381 (1908).

As to the "test" of "professional approval of the invention", it was pointed out at the trial that the process of the invention at issue is now being utilized commercially

in some 13 countries including several Iron Curtain countries (JA 45), that over one *billion* square feet of wood have been coated industrially by means of the subject invention (JA 49) and that patents on the invention had been granted in a great many foreign countries (JA 46, 70-72, 74). In this regard, the facts of this case are comparable to those in the case of *Mineral Separation Ltd. v. Hyde*, 242 U.S. 261, 270 (1916), wherein the Supreme Court upheld the patent.

As to the "test" concerning "the level of ordinary skill in the art", each of the three witnesses who testified at the trial, Messrs. Levring, Taylor and Jensen, was qualified as having a high degree of skill in the art, and these qualifications were not in any way challenged or contradicted (JA 17-18, 84, 133-135).

As to the "tests" relating to the "scope and content of the prior art", and the "differences between the prior art and the claims at issue", each of the witnesses testified in detail on the individual patents. In doing so, each witness discussed the entire teachings of each prior patent, as is proper, since it has been generally agreed by all Courts that references must be analyzed on the basis of the facts disclosed therein as a whole, not merely on the basis of random facts or portions thereof. *In re Wesslau*, 353 F. 2d 238 (CCPA 1965); *In re Shuman and Meinhardt*, 361 F. 2d 1008 (CCPA 1966).

In considering the Aylsworth patent No. 1,139,470 (JA 161-163), the testimony at the trial established that the "teaching" of this patent was to "thoroughly dry" the wood for several hours before coating and then to heat for several more hours after coating. It was also established that this "teaching" is *opposite* to Appellant's invention which does *not* want to dry out the wood and which is carried out in a few seconds or minutes, rather than hours. (JA 76, 94-97, 130-131).

In considering the Gard patent No. 2,631,109 (JA 169-174), the testimony at the trial established that the "teaching" of this patent was to reduce the water content of the article to zero by heating the interior thereof at least as hot, or hotter, than the exterior thereof. It was also established that this "teaching" is *opposite* to Appellant's invention which does *not* want to reduce the water content at all and which does *not* want to heat the interior of the article at all (JA 78-79, 97-101, 131-132).

In considering the Taylor patent No. 1,435,031, (JA 178), the testimony at the trial established that the "teaching" of this patent was to impregnate the ends of logs with melted paraffin so that such logs will not become waterlogged as they float down a stream. It was also established that this process is quite remote from Appellant's surfacing finishing process and that "melted paraffin" is not a material which is used in the surface finishing industry. (JA 77, 103-104, 133).

Finally, even aside from the fact that the foregoing discussion clearly establishes that Appellant's invention meets all of the "tests" which establish the nonobviousness thereof, the testimony presented by persons skilled in the art at the trial established, beyond question, that it would not have been obvious to combine the Aylsworth, Taylor and Gard patents, in any manner whatsoever, to arrive at Appellant's process.⁹ Indeed, one of the witnesses, Mr. Taylor, testified that when he had conducted various tests in an attempt to circumvent Appellant's process, he did not specifically know of the Aylsworth, Taylor and Gard patents (JA 106-107). However, when Mr. Taylor was

⁹ Each of the independent expert witnesses testified that it would not have been "obvious" to them, as workers highly skilled in the art, to combine the Aylsworth, Taylor and Gard patents in any manner whatsoever, much less in a manner which would arrive at Appellant's process (JA 106, 139). Lack of obviousness to the experts is certainly an important factor for the Court to consider in a case under 35 USC 145. *L-O-F Glass Fibers Co. v. Watson*, 97 U.S. App. D.C. 69, 228 F. 2d 40 (CADC 1955).

questioned as to whether knowledge of these patents at the time he conducted his tests would have led him to Appellant's process, the Court answered the question itself by stating (JA 120):

"THE COURT: I think he made that clear. In other words, it wouldn't have in any way led him to the steps that were taken in the Levring process."

By this very statement, it would seem that the Court itself recognized that at least this witness, who was qualified as one highly skilled in the art, would not have been led to combine the teachings of the Aylsworth, Taylor and Gard patents to arrive at Appellant's process. Yet, despite the Court's observations to this effect at the trial, its decision and Findings are contrary since they indicate that it would indeed have been "obvious", in view of these prior patents, to arrive at Appellant's invention.

E. The Court's Analysis of the Legal Requirements of the Claims on Appeal Was Contrary to Law

At the trial, great emphasis was placed upon the fact that Appellant's invention maintained the "moisture balance" of the wooden article being treated. Each of the witnesses carefully pointed out that the great value in Appellant's process resided in its ability to produce such *results*, thereby assuring that the treated article would not be subject to warping. However, the District Court in its Finding of Fact No. 4 stated as follows (JA 154-155):

"Although Plaintiff indicated in his trial testimony that a principal distinguishing feature of his method was the moisture balance of the wooden article, none of the claims at issue contain any such limitation, and the specification does not describe this feature. The claims do not preclude the use of thoroughly dry wood as used in the Aylsworth and Gard processes."

In the first place, it was not Plaintiff alone, but the other witnesses as well, who indicated that this "moisture bal-

ance" was a principal feature resulting from Appellant's invention (JA 94, 131). Moreover as to the Court's observation that the specification does not describe this feature, it was indeed pointed out during the testimony that the specification *did* describe this feature, and such testimony was not challenged or contradicted (JA 56, 57).

The more disturbing feature, however, of the Court's analysis is that it holds the advantageous "moisture balance" resulting from the invention to be a "limitation" and that it states that "none of the claims at issue contain any such limitation". Appellant submits that "moisture balance" is *not* a "limitation" which properly could be set forth in the claims on appeal. Instead, this is merely the *result* of the process set forth in the claims, or alternatively, it could be considered an *advantage* of the invention. It must be remembered that the claims on appeal herein are process claims and need only set forth the particular steps comprising the process and the conditions under which such steps are carried out. *Cochrane v. Deener*, 94 U.S. 780 (1876); *In re Magat*, 240 F. 2d 351 (CCPA 1957). In fact, it is well known that it is *improper* to rely upon the particular results produced by an invention as grounds for patentability, *Holland Furniture Company v. Perkins Glue Company*, 277 U.S. 245, 257 (1927), and it is therefore apparent that the *result* achieved by Appellant's invention, namely, moisture balance, could not be considered as a "limitation" in the claims on appeal, as suggested by the District Court. Moreover, it is uniformly recognized and acknowledged that an inventor is entitled to all results stemming from his invention, even if such results have not been mentioned in the patent application. *Diamond Rubber Co. v. Consolidated Tire Co.*, 220 U.S. 428, 434 (1911).

Additionally, the District Court held that "the claims do not preclude the use of thoroughly dry wood as used in the Aylsworth and Gard processes". In the first place, Appel-

lant strongly urges that it is not the function of the claims to "preclude" anything, but rather, the claims are to point out and define the invention. As the Court of Customs and Patent Appeals stated in the case of *In re Sarett*, 327 F. 2d 1005 (1964):

"The *function* of the claims is to *point out* the invention and *define* the scope of the monopoly, *not to exclude* substances which are possibly of no use in practicing the invention." (Emphasis added)

Additionally, Appellant refers to the recent decision of the Supreme Court in *United States v. Adams et al.*, 383 U.S. 39 (1966) wherein the Court noted that certain claims of the patent did not specifically mention a water electrolyte, yet by an overall reading of the specification it was obvious that this electrolyte was needed for the invention. In this connection, the Court specifically stated as follows: (pp. 48-49):

"While the claims of a patent limit the invention and specifications cannot be utilized to expand the patent monopoly, (citations), *it is fundamental that claims are to be construed in the light of the specification and both are to be read with a view to ascertaining the invention (citations).*" [Emphasis added]

The entire thrust of Appellant's invention and one of the principal results and advantages achieved thereby is the "moisture balance" aspect thereof so that normal seasoned wood can be treated without altering its characteristics and there is no more need for Appellant to have "precluded" the use of thoroughly dry wood in his claims than there would have been for Mr. Adams, in the case of *United States v. Adams, supra*, to have "precluded" acid, gasoline, or any other substance as an electrolyte for his battery.

Indeed, in this instance, Appellant has fully complied with the law since his claims do point out the manipulative

steps involved in his process and the conditions under which such steps are performed. If a person carries out Appellant's claimed process, he will necessarily achieve the *result* of "moisture balance" but this *result* is hardly a "limitation" which need appear in the claims. Also, if one skilled in the art wants to practice Appellant's process of surface coating, he will not begin by using "thoroughly dry wood".

CONCLUSION

In view of the foregoing, it is believed that the Court will find that the District Court failed to apply the proper legal standards to the case before it, and that if such standards had been properly applied, they would have resulted in a holding that Appellant has created a new, useful and non-obvious process on which he is entitled to a patent. Appellant, therefore, prays that the Judgment of the District Court be reversed and that Defendant-Appellee be authorized to issue a patent on the said invention.

Respectfully submitted,

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**United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA**

Appeal No. 20,884

HELGE ERIK LEVRING, PLAINTIFF-APPELLANT

v.

**EDWARD J. BRENNER, COMMISSIONER OF PATENTS
DEFENDANT-APPELLEE**

**Appeal from the Judgment of the United States
District Court for the District of Columbia**

BRIEF FOR THE COMMISSIONER OF PATENTS
United States Court of Appeals
for the District of Columbia Circuit

FILED JUL 6 1967

Nathan J. Paulson
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STATEMENT OF QUESTIONS PRESENTED

In the opinion of the defendant-appellee, the question presented on this appeal is:

Was the District Court clearly wrong in holding, on the evidence before it, that the subject matter of claims 9, 10 and 11 of plaintiff-appellant's patent application would have been obvious to one of ordinary skill in the art of coating porous materials.

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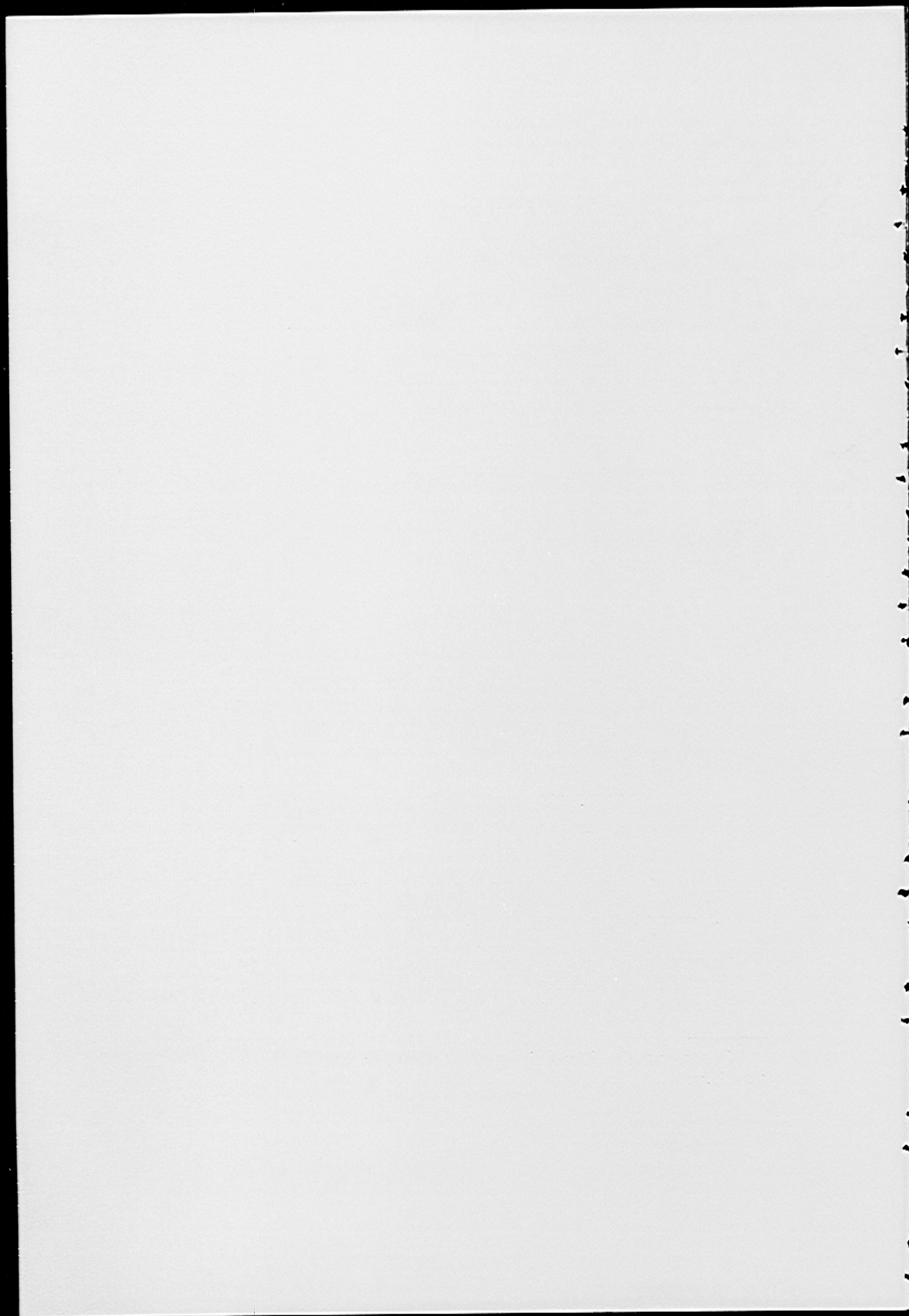
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* Cases or authorities chiefly relied upon are marked by an asterisks.



United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA

Appeal No. 20,884

HELGE ERIK LEVRING, PLAINTIFF-APPELLANT

v.

EDWARD J. BRENNER, COMMISSIONER OF PATENTS
DEFENDANT-APPELLEE

Appeal from the Judgment of the United States
District Court for the District of Columbia

BRIEF FOR THE COMMISSIONER OF PATENTS

COUNTERSTATEMENT OF THE CASE

This is an appeal (J.A. 159) from the order of judgment of the United States District Court of the District of Columbia Circuit, filed November 10, 1966 (J.A. 158), dismissing the Complaint in Civil Action 2499-65 (J.A. 3) against the Commissioner of Patents, defendant-appellee, in an action brought

under the provisions of Title 35 United States Code, Section 145, in which the plaintiff-appellant, Helge Erik Levring, sought a decree authorizing and directing the Commissioner to issue to plaintiff letters patent of the United States, based upon and containing three claims of plaintiff's patent application, Serial No. 671,412, filed July 12, 1957, entitled "Method of Applying Coatings to the Surfaces of Porous Material". The claims at issue are set forth in the paragraph 5 of the complaint (J.A. 4, 5).

The complaint was dismissed by the District Court after a hearing at which plaintiff-appellant introduced expert testimony and numerous physical exhibits in an effort to show that the tribunals of the Patent Office had erred in concluding that a patent could not lawfully be granted on the involved application. After taking the matter under advisement and after a consideration of the record and briefs filed by counsel, the trial court rendered an opinion (J.A. 156) accompanied by separate findings of fact (J.A. 153) and conclusions of law (J.A. 156) sustaining defendant-appellee's refusal to issue a patent based upon the involved application.

Appellant's Application

The application involved in this proceeding relates to a method of applying a coating to the surface of a porous heat conductive material such as wood, paper, cork or fibre (J.A. 185, last paragraph). In the disclosed method, the material to be coated is first heated superficially in any well known manner, as

for example by the radiation of heat against the surface or in an oven (J.A. 187, lines 6 et seq.), for a period of time not in excess of 120 seconds, to raise its surface to a temperature of between 150° and 390°F. Immediately thereafter, a coating consisting of varnish, enamel or oil is applied to the material in any well known manner, e.g. by roller coating, brushing, pouring, spraying or dipping. The time and intensity of the heating and the temperature of the coating substance are said to be such that upon application of the coating to the surface of the material, the temperature of the surface will immediately drop by at least 50°F. If the coating applied needs a further heat treatment, it is suggested in the application specification that the *heat accumulated in the body* of the material be used to expedite the reheating by heat conduction to the surface (J.A. 186), last 8 lines; J.A. 187, lines 1-5).

The Claims On Appeal

There are three claims at issue in this appeal (J.A. 5, 6). All of the appealed claims define a process of applying a coating to the surface of a wooden article. Of the three claims, claim 9 would appear to be the broadest. It calls for a two step method of heating and coating a wooden article as just described.

Claim 10, which depends upon claim 9, adds to that claim a third step of subjecting the surface of the article to a blast of cold air upon application of the lacquer.

Claim 11, like claim 10, recites the three step method of heating, coating and drying the surface of

the wooden article, but specifies that the final drying step is carried out by reheating the surface sufficiently to polymerize the coating substance.

The Prior Art

Appellant's claims were held unpatentable by the District Court in view of the following patents:

Aylsworth	1,139,470	May 18, 1915	(J.A.-161)
Carter	1,140,873	May 25, 1915	(J.A.-164)
Taylor	1,435,031	Nov. 7, 1922	(J.A.-178)
Hofmann	1,547,890	Mar. 2, 1926	(J.A.-175)
Gard	2,631,109	Mar. 10, 1953	(J.A.-169)

The Aylsworth patent, No. 1,139,470 (J.A. 161) discloses a process for coating wood and other porous, cellular or fibrous substances with a varnish or enamel composition. In the Aylsworth process, the wood to be coated is (1) heated to a temperature of 220° or higher, and then, while hot, is (2) dipped in or coated with a cold solution of lacquer and immediately removed therefrom. Thereafter (3), the coated substance is dried by a baking operation at a lower temperature than that to which the uncoated substance was initially heated, the length of time of the baking operation being dependent upon the time required for the particular lacquer selected to dry.

The patent to Taylor, No. 1,435,031 (J.A. 178) describes a process of coating the surface of wood in which the surface of the wood is rapidly heated by a hot blast of air or by the application of a heated plate of iron thereto for *a few seconds* to a temperature above the temperature of a liquid, such as paraf-

tin, to be applied. Immediately thereafter the wood is swabbed with hot paraffin and then suddenly cooled to harden the paraffin and prevent it from penetrating the wood beyond a predetermined depth.

The patent to Gard, No. 2,631,109 (J.A. 169) discloses a method of impregnating wood which included the steps of heating the wood to a temperature above 212°F. and immersing the wood while so heated in a bath of thermoplastic, impregnating material, the temperature of which is as low as possible (J.A. 172, Col. 5, lines 14 to 25) and at least 50°F. below that of the heated wood. Gard states (J.A. 173, Col. 7, lines 17 to 24) that it is possible to *localize* the heating and impregnate only those areas that have been heated.

Both the patent to Carter No. 1,140,873 (J.A. 164) and the Hofmann patent No. 1,574,890 (J.A. 175) show that it is a conventional practice in the coating art to subject a coated base to a blast of cool air. Appellant admits (see note 5, page 5 of his brief) that the blast method of curing coatings is conventional, and the Carter and Hofmann patents need not, therefore, be further considered.

The Grounds For Refusal Of The Claims

Both the Board of Appeals (J.A. 183) and the District Court (J.A. 157) found that the claims fail to define patentable invention over the five references cited. In its decision, the District Court held (J.A. 157) that "in the circumstances and on the evidence * * * the results obtained by the plaintiffs as set forth

in the claims * * * would be obvious to one reasonably skilled in the art * * *".

THE STATUTE INVOLVED

Act of July 19, 1952, C. 950, 66 Stat. 798, U.S.C. Title 35 § 103.

SUMMARY OF ARGUMENT

Appellant has the burden of showing that the District Court was clearly wrong in finding that the claimed subject matter as a whole would have been obvious at the time it was devised to a person of ordinary skill in the art. Appellant has failed to make such a showing.

The Aylsworth patent discloses a method of coating a wooden article which includes the basic two steps of appellant's alleged invention. The limitations recited in the claims not disclosed by Aylsworth would have been obvious to a person of ordinary skill in the art with the disclosures of Taylor and Gard to guide him.

ARGUMENT

Appellant's burden of proof

In its Opinion (J.A. 156-158), the District Court concluded that, on the evidence, the results obtained * * * would be obvious to one reasonably skilled in the art". In *Abbott et al. v. Coe*, 71 App. D.C. 195, 109 F.2d 449, this Court stated:

The question for us is not whether in our opinion

there was invention, but whether the finding that there was none is consistent with the evidence.

Similarly, in *Johns-Mansville Corp. v. Ladd*, 328 App. D.C. 563; 328 F.2d 563, 140 USPQ 362, it was stated:

* * * [A]s we have frequently stated, the findings of the Patent Office, an expert administrative body, especially when confirmed by the District Court, will not be overturned here unless clearly infected with error. *Zenith Radio Corporation v. Ladd*, 114 U.S. App. D.C. 54, 57, 310 F.2d 859, 862 (1962).

Accordingly, appellant has the burden of proving that there is no rational basis in the evidence before the District Court for its decision agreeing with the Patent Office tribunals that claims 9, 10 and 11 are not patentable.

Unpatentability Over The Prior Art

As already noted, claim 9 (J.A. 4), treated as exemplary by the Board of Appeals (J.A. 183), the District Court (J.A. 157) and plaintiff-appellee (Brief-4), sets forth a method of coating a wooden article which includes the two steps of:

(1) superficially heating the article for a period not exceeding 120 seconds to raise the surface temperature thereof to between 120°F and 390°F., and

(2) immediately thereafter, applying to the surface of the article a lacquer finish which causes the temperature of the surface of the article to drop by at least 50°F.

The patent to Aylsworth (J.A. 161-163), it is be-

lieved clear from the description of that reference, shows the basic two steps of plaintiff-appellant's alleged invention, that is.

(1) heating a wooden article to a temperature of between 120°F. and 390°F., and

(2) immediately thereafter (before the article has had a chance to cool) applying to the surface of the article, a cold solution or fluid form of heat hardenable varnish or lacquer.

From the above comparison, it is apparent that plaintiff-appellant's process as recited in basic claim 9 is identical with that of Aylsworth except for the duration of the heating and the extent of the temperature drop. Appellant-plaintiff superficially heats his wooden article for a time not in excess of 120 seconds whereas Aylsworth heats his article long enough to dry the wood out, indicating that as long as eight hours may be required. Appellant-plaintiff claims a surface temperature drop of at least 50°F. upon the application of the lacquer to the article, whereas Aylsworth states that he dips his wooden article in a cold solution of coating fluid without specifying the number of degrees that the surface temperature of the article drops upon its immersion in the fluid.

The practice of superficially heating the surface of a wooden article (a log) prior to coating the same is taught by Taylor (J.A. 178). Taylor specifically states (J.A. 178, col. 1, lines 31 to 35) that the "ends of the log are then rapidly heated by a blast of hot dry air or by the application of a heated plate

for a few seconds of time" (emphasis added). That Taylor's heating would inherently be superficial is apparent from basic principles of heat conduction. The heating of a wooden article exposed to either a blast of hot air or heated by a plate of iron would begin at the surface and spread inwardly at a very slow rate (wood being a very poor conductor of heat). As pointed out in defendant-appellee's brief before the District Court, everyone knows that if one end of an iron poker is put into a fire, the other end, unless provided with a wooden handle, soon burns one's hand. It is common knowledge that if one end of a wooden rod is set on fire (as in lighting a wooden match), one feels almost no warmth at the other end. Taylor, by exposing his article to either a blast of hot air or a heating iron for a few seconds, thus teaches superficially heating a wooden article prior to coating the same. That Taylor (J.A. 178) also shows that the practice of suddenly cooling an article after it has been coated is not challenged by appellant.

The patent to Gard (J.A. 169) clearly teaches the applying of a thermoplastic resin to the surface of a wooden article in such a manner that the surface temperature of the article will drop at least 50°F. Gard specifically states (J.A. 172, col. 5, lines 14 to 25) that the "general rule is to have the temperature of the saturant as low as possible and the wood temperature as high as possible" and that a "temperature difference" of at least 50°F. should exist. In claim 4 (J.A. 173), wood is heated to a temperature of 300°F. and immersed in a coating bath heated to

a temperature of 170°F., a 130°F difference. Since there is a 130°F. difference in temperature, heat will flow away from the wood to the lower temperature coating. This action, contrary to plaintiff-appellant's comments (Brief 11, 19), will cause at least a 50° drop in the surface temperature of the wood. Gard also teaches localizing the heating (J.A. 173, col. 7, lines 16 to 24).

In view of the clear disclosures of Taylor and Gard and plaintiff-appellant's admission (Brief 5, foot note) relating to the disclosures of the Carter (J.A. 164-168) and Hofmann (J.A. 175-177) patents, it is respectfully submitted that it was rightly held by the Patent Office Board of Appeals (J.A. 183-185) and the District Court (J.A. 155, 156 Finding of Fact No. 11) that the difference between the subject matter of claims 9, 10, and 11 and the prior art are such that the subject matter as a whole would have been obvious at the time the alleged invention was made to one of ordinary skill in the art. Enumerations of error 9, 11, 12, 13 and 14 (Brief 11) are therefore submitted to be without merit.

Among the several arguments advanced by the plaintiff is his contention (Brief 13), citing *Graham v. John Deere Co. et al.* 383 U.S. 1, that the Supreme Court has now established the "Tests" to be applied in considering whether the invention is obvious under 35 U.S.C. 103. He also asserts that these obviousness tests must be applied by the District Court in a case under 35 U.S.C. 145 and alleges that the District Court erred in either failing to apply the "Tests" or in doing so incorrectly (Enumeration of error No. 3;

Brief-10, 17). Defendant-appellee has no quarrel with the first two arguments. Of course, issue is taken with the third. It is thought to be clear from the record that the District Court not only agreed with plaintiff-appellant as to the tests to be applied, but rested its order dismissing plaintiff-appellant's complaint on the decision in *Graham v. John Deere Co. et al.*, *supra*, the very same case that laid down these tests. In this connection the Court's attention is invited to Finding of Fact No. 6 which points out the basic difference between the prior art, as represented by the Aylsworth patent and the claims in issue; Findings of Fact Nos. 3, 7, and 8 which point out the scope and content of the prior art, and Finding of Fact No. 9 which points out the level of ordinary skill in the prior art. These findings not only show a complete awareness on the part of the District Court of the proper tests to be used in determining obviousness under Section 103 of the Title 35, United States Code, but an application of the tests to the facts in this case as well. Enumerations of error 1, 2 and 3 (Brief 10) and the arguments set forth on page 17 of plaintiff-appellant's brief are therefore submitted to be lacking in merit.

Enumeration of error 4 (Brief 10) complains of the District Court's adopting the proposed findings of the Patent Office as its own. This action by the District Court does not constitute error. The fact that the District Court adopted the proposed findings of fact and the conclusions of law without specific comment on any new evidence presented at the trial in its decision affords no basis for appellant's critical

comment (Brief, pages 10 and 18). It is, of course, proper for a Court to adopt suggested findings and conclusions if they are supported by the record. As to the failure to comment on new evidence, the following from *Zenith Radio Corp. v. Ladd*, supra, is pertinent:

"Zenith had full opportunity to introduce its evidence bearing on the issue of patentability, and we find no basis for surmising that the trial judge disregarded his duty to make an independent evaluation of the evidence before him."

Enumerations of error 5, 6 and 7 complain of the District Court's analysis of the claims and specification particularly as it relates to "moisture balance". In this connection plaintiff-appellant asserts (Brief 6) that the wood used in the prior art was "thoroughly" dried before being coated and states that, in his process, the moisture content is substantially unaltered. This statement and the supporting argument relating to moisture balance do not demonstrate error on the part of the trial court in its analysis of the claim. The District Court properly concluded, it is submitted, that the limitations in the claims relating to the wood to be coated do not preclude the use of wood that has been thoroughly dried out and stored for a period of time prior to the superficial heating step. By plaintiff's own admission (J.A. 56), limitations as to moisture balance are absent from the appealed claims. No such limitation, in fact appears in the specification (see testimony of plaintiff-appellant J.A. 56, 57). If such a predried wood was used

in the Aylsworth process, it would enter the coating operation with a moisture content of zero, be heated prior to coating and leave the coating with a moisture content of substantially zero. Thus, the moisture content of the predried wood or any other wood used would *not* be substantially changed due to the coating operation.

Appellant's arguments (Brief, pages 25, 26) that it is not the function of claims to "preclude" anything and that they are to be interpreted in the light of the specification are not well taken. It is indeed the function of claims to exclude that which is old or obvious and that which would render the invention a nullity. As stated in *General Electric Co. v. Nitro Tungsten Lamp Co.*, 266 Fed. 994:

"A claim is both a definition and an assertion. The definition must be justified by the disclosure; the assertion stands alone. The claim as proposed would have found support in the disclosure, but as an assertion it said too much, in that it would have read on some of the experimental failures of previous scientists if only any known tungsten filament were substituted for carbon. But such a lamp would not have worked at all, * * *.

He did not invent any nitrogen-filled bulb with any tungsten filament in it, but a special article of special proportions and a carefully stated coordination of facts."

In this case appellant's process is seemingly limited in utility to porous substances of substantial moisture content but the claims are not so limited.

As to the suggestion (Brief on Behalf of Plaintiff-Appellant, page 26) that an omission in the claims may be cured by reference to the specification, reference is made to the statement in *In re Carr*, 54 App. D.C. 270, 296 Fed. 1017, as follows:

"After a patent has issued, and it no longer is possible for the patentee to control the phraseology of his claims the Courts will so interpret them, if possible, as to protect him; but there is no reason, as we many times have observed, why an applicant in the Patent Office should not draw his claims to cover his actual invention only. For this reason, we have uniformly ruled that claims will be given the broadest interpretation of which they reasonably are susceptible. This rule is a reasonable one and tends not only to protect the real invention but to prevent needless litigation after the patent has issued."

The decision in *United States v. Adams et al.*, 383 U.S. 39, relied on by appellant, dealt with an issued patent, and is lacking in pertinence here.

Finally, in connection with plaintiff-appellant's arguments relating to commercial success (Brief 7, 21), it may be stated that in analyzing the alleged improved results (shortened curing time) which is said to make plaintiff-appellant's process commercially attractive, it is submitted that one is not impressed by a difference attributable to appellant's process. Logically, the improvement could flow from taking an already dry wooden article (as noted hereinbefore, the claims do not preclude this) and processing it in the manner taught by the Aylsworth, Taylor and

Gard patents (that is heating it to a temperature of between 120°F. and 390°F. for a few seconds as taught by Taylor and immediately thereafter coating it with a lacquer to cause the temperature to drop at least 50°F. as taught by Gard). The fact that Taylor gets good impregnation with only superficial heating would impel one using the Aylsworth process to try superficial heating. Further, it may be stated that commercial success, improved results, and long felt demand, are but secondary considerations which, although they may have some relevancy as indicia of obviousness or nonobviousness, are of important only when the question of obviousness is in doubt, *In re Busch* 45 CCPA 766; 251 F.2d 617, 116 USPQ 413. Where, as here, there is no doubt that the improvement resulted from routine efforts of the artisan, it is submitted that commercial utility is unimportant. To support a patent, it must be shown that the claimed process was not unobvious to one skilled in the art who had before him the cited references. This, the plaintiff, by giving the District Court the opinions of three European experts who admittedly had no knowledge of the art as practiced in the United States industry, clearly has not done. *Glatt v. G. C. Murphy Co.*, 270 F.2d 137; *Lindberg Engineering Co., v. Ajax Engineering Co.* 199 F.2d 807.

CONCLUSION

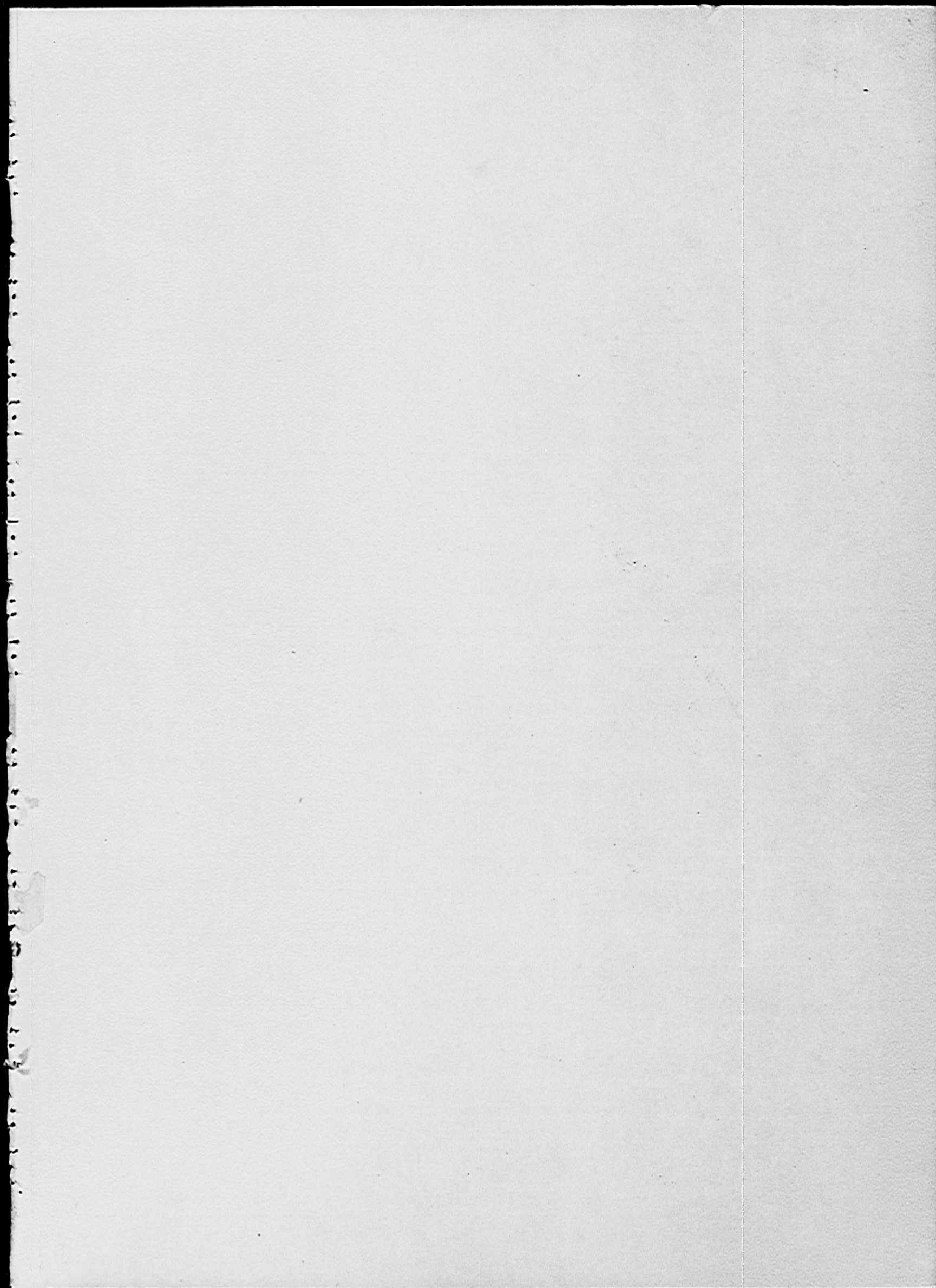
It is respectfully submitted that, for the foregoing reasons, the conclusion's reached by the Board of Appeals and the District Court that the claims at bar are not patentable over the prior art find support in the evidence of record in this proceeding, and that there is reasonable and rational basis in that record for the judgment of the lower Court dismissing the complaint. The decision appealed from should, therefore, be affirmed.

Respectfully submitted,

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July 1967



IN THE
United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Appeal No. 20884

HELGE ERIK LEVRING, *Plaintiff-Appellant*,

v.

EDWARD J. BRENNER, Commissioner of Patents,
Defendant-Appellee.

On Appeal from the United States District Court for the
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APPELLANT'S REPLY BRIEF

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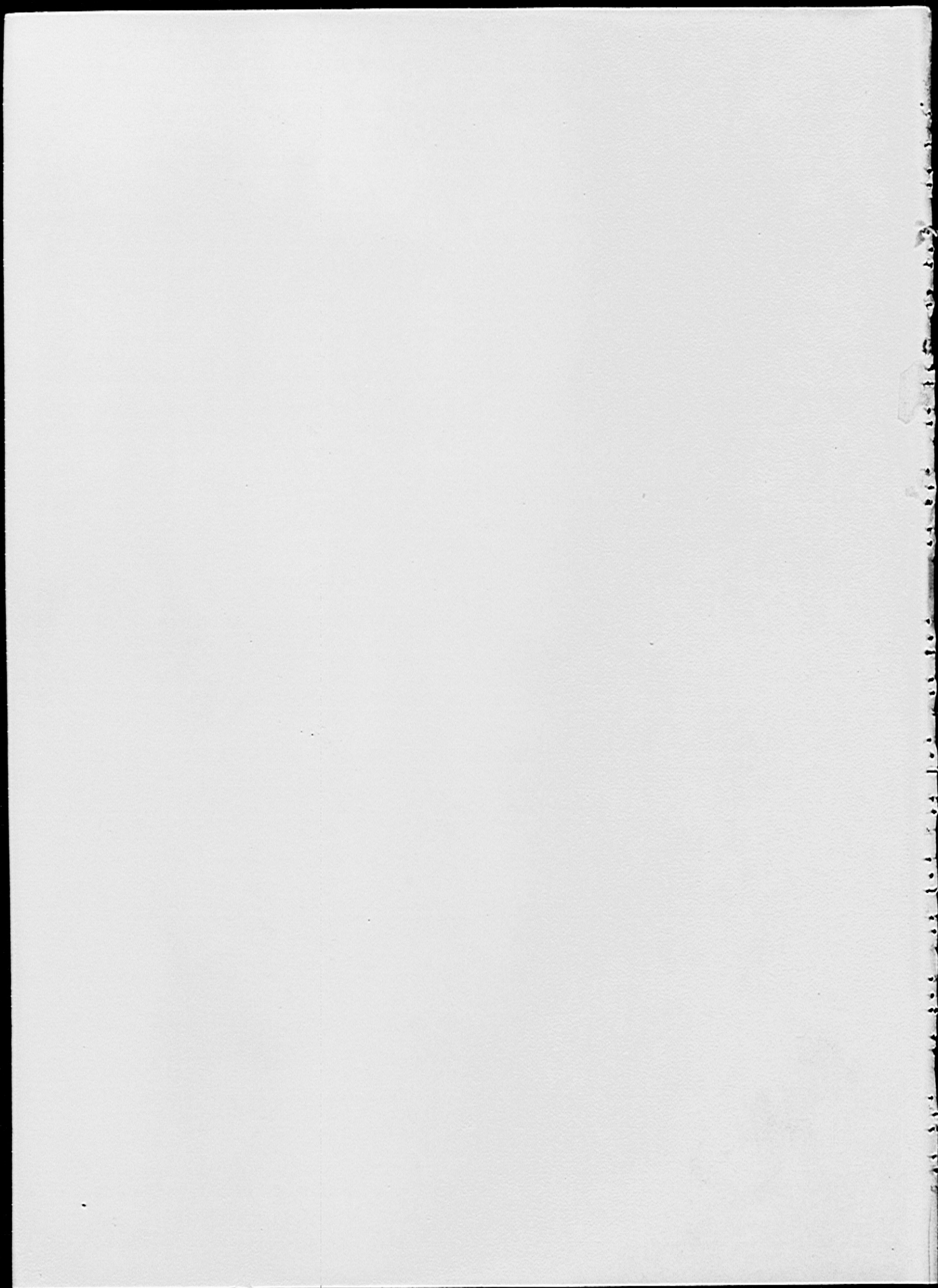
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United States Court of Appeals
for the District of Columbia Circuit

FEB AUG 28 1967

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APPEAL No. 20884

HELGE ERIK LEVRING, *Plaintiff-Appellant*,

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APPELLANT'S REPLY BRIEF

A. Introduction

This is a Reply Brief under the provisions of Rules 17(d) and 18(c) of this Court in answer to certain arguments raised in the Brief For The Commissioner of Patents, filed herein on Appellee's behalf.

From a reading of the Statement of The Case (Appellant's Brief) and the Counter-Statement of The Case (Appellee's Brief), the Court will readily see that this is an appeal from the decision of the District Court dismissing Plaintiff-Appellant's complaint brought under 35 U.S.C.

145 which sought Court authorization for Defendant-Appellee to issue United States Letters Patent for application Serial No. 671,412, filed July 12, 1957.

As is made clear by Appellant's main Brief, the basis for this appeal is that the District Court failed to apply, or improperly applied, the requisite *legal* standards in arriving at its decision. Appellee's Brief suggests an analysis which could support the District Court decision, but, as will be pointed out hereinafter, such an analysis is as faulty as the decision itself.

B. The Legal Issue as to Whether Patent Applications Claims Must Exclude Useless Materials

The main Brief clearly establishes that the invention at issue relates to a wood finishing process wherein the "moisture balance" (i.e., moisture content) the wooden article being coated remains substantially constant and undisturbed by the processing steps. Naturally, if the moisture content is to remain constant and balanced, there must necessarily be some moisture in the wood to begin with, otherwise there would be nothing to remain in "balance".

Thus, it was clearly established at the trial that "*thoroughly dry wood*" would not be used in the process of the present invention and that any suggestion to use such wood would be contrary to the very teachings and objectives of the invention.¹ Nevertheless, the District Court held (JA 155) that the claims of the application at issue "do not preclude the use of thoroughly dry wood". Appellant has urged in its main Brief (Statement of Points #6, pp. 25-26) that this holding of the District Court is

¹ The basic prior art patent to Aylsworth, in fact, uses the words "thoroughly dry" (Col. 1, line 44) and the testimony at trial established that the invention involved herein clearly does not want to "thoroughly dry" out the wood. e.g. JA 76, 130-131.

in error, relying upon the case of *In re Sarett*, 327 F. 2d 1005 (CCPA 1964).

Appellee, however, argues in his Brief (p. 13) that the claims should indeed "preclude" the useless material "thoroughly dry wood", despite the fact that Appellee himself recognizes that the process at issue is "... limited in utility to porous substances of substantial moisture content . . ." (Appellee's Brief, p. 13, last paragraph).

It thus appears apparent that both Appellant and Appellee recognize that the process at issue is not concerned with "thoroughly dry" wood, a fact clearly established by the record in this case, but Appellee nevertheless asks this Court to affirm the Trial Court's holding of unpatentability based upon the fact that the claims on appeal do not "preclude" this useless material. Appellant submits that this approach is contrary to both sound reasoning and law.

There are many instances where process claims have been held valid (i.e., patentable) despite the fact that the claim terminology could literally include an inoperative or useless material. In the case of *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U.S. 403, 22 S.Ct. 698 (1902), the Supreme Court held valid, process claims which called for "mixing molten metal" despite the fact that the process would only work with one type of molten metal, namely, "blast furnace metals" and not with another type of molten metal, namely, "cupola metals." Similarly, in the case of *Expanded Metal Co. v. Bradford*, 214 U.S. 366, 29 S. Ct. 652 (1908), the Supreme Court upheld process claims directed to a method of making reticulated metal work despite the fact that the process could only be practiced using ductile and malleable metals, and could not be practiced with brittle and non-ductile metals. In the case of *Minerals Separation v. Hyde*, 242 U.S. 261, 37 S. Ct. 82 (1916), the Supreme Court upheld claims to a separating

process which would work only with "sulfide ores", not with "oxidized ores".²

Appellant could cite many more cases to support his contention, but it is believed that the point is clear—the process at issue is not in any way directed toward "thoroughly dry" wood and the District Court erred in holding the claims to the process unpatentable because they do not "preclude" the use of such "thoroughly dry wood". This error is, of course, a legal error rather than a factual one, and consequently, the provisions of Rule 52(a) are inapplicable.

C. Appellee's Argument as to "Moisture Balance" and "Commercial Success" Necessarily Fail With Their Argument That the Claims Don't Preclude Useless Materials

Appellant has argued that the Trial Court's characterization of the "moisture balance" aspects of the invention is erroneous and that the fantastic commercial success of the invention is indicative of the nonobviousness thereof.

Appellee has responded to such arguments by again attempting to interpret the process as using "thoroughly dry wood", a material which, as previously pointed out, is useless in practice of the invention at issue. Thus, Appellee states (Brief, pp. 12-13):

"The District Court properly concluded, it is submitted, that the limitations in the claims relating to the wood to be coated do not preclude the use of wood that has been thoroughly dried out. . . . If such a predried wood was used in the Aylsworth process, it would enter the coating operation with a moisture content of zero, be heated prior to coating and leave the coating with a moisture content of substantially zero. Thus, the moisture content of the predried wood

² This distinction in materials is not even mentioned in the Court's Opinion, but is discussed in Ridsdale Ellis' landmark work, *Patent Claims*, Baker, Voorhis & Co., 1949, p. 501.

or any other wood used would *not* be substantially changed due to the coating operation. (Emphasis his).

While such an analysis is correct if the wood were, in fact, "predried" or "thoroughly dried out", by the same token it is *incorrect* if the wood were not "predried" or "thoroughly dried out", since, in such an instance, the wood would enter the Aylsworth process with a specific moisture content and would leave the process with a zero moisture content. It has previously been pointed out that "thoroughly dry wood" is a material antithetic to the present invention and once this material is excluded from consideration, Appellee's entire argument as to moisture balance fails.

Appellee also states (Brief, pp. 14-15):

"Finally, in connection with plaintiff-appellant's arguments relating to commercial success (Brief 7, 21), it may be stated that in analyzing the alleged improved results (shortened curing time) which is said to make plaintiff-appellant's process commercially attractive, it is submitted that one is not impressed by a difference attributable to appellant's process. Logically, the improvement could flow from taking an already dry wooden article (as noted hereinbefore, the claims do not preclude this) and processing it in the manner taught by the Aylsworth, Taylor and Gard patents"

Again, such an argument fails when the useless "thoroughly dry wood" is excluded from consideration, whereupon it becomes apparent that the fantastic commercial success of the invention is due to the inherent value of the process itself.

D. Appellee's Arguments as to the Court's Evaluation of the Evidence and as to the Testimony of the Experts Are Without Merit

Appellant has charged as error in this case, the fact that the District Court failed to even allude to the new evidence presented at trial, but instead, merely adopted the Patent Office's proposed Findings and accompanied the same by a short conclusory memorandum opinion.

This Court has already stated that the "presumption of administrative correctness" does not apply where the trial presents uncontradicted proof not previously presented to the Patent Office, *Stradar v. Watson*, 100 App. D.C. 289, 244 F. 2d 737 (1957) or where an assumption underlying a Patent Office finding is demonstrably inaccurate in a material degree, *California Research Corp. v. Ladd*, 123 U.S. App. D.C. 65, 365 F. 2d 813 (1966). Yet, what good does it do for an appellant to present such new evidence or demonstrate such underlying errors if the Trial Court is free to totally disregard such proof? Appellant does not argue that its newly presented evidence must necessarily carry the case in its favor, since the Trial Court always can and should consider the Patent Office record. However, when, as in this case, the record indicates that the newly presented evidence was *ignored* or *disregarded*, then Appellant submits that the Trial Court committed reversible error.

However, Appellee argues (Brief, pp. 11-12) that the District Court did not commit error, citing the case of *Zenith Radio Corp. v. Ladd*, 114 App. D.C. 54, 310 F. 2d 859. In the *Zenith* case, however, only a single witness testified and no physical evidence was presented. Additionally, this Court found that the most important feature of the witness' testimony (asymmetrical metal removal) had not been argued previously before the Patent Office. Appellant suggests that *Zenith* presented a situation similar to that which confronted the Court in *Lyman v. Ladd*, 120

App. D.C. 388, 347 F. 2d 482 (1962) wherein the Appellant was the sole witness and his testimony consisted solely of an attack on the operability of the reference patent.

In the present case, unlike the situation in *Zenith* or *Lyman*, there was physical evidence presented at the trial including a series of test specimens and a detailed test report (JA 212-220) and detailed testimony concerning this physical evidence was also presented (JA 22-44). Moreover, instead of a single witness, there were *three witnesses*³, including two *independent experts*, and such witnesses testified as to specific errors and inaccuracies in the presumptions underlying the Patent Office findings. Finally, the inventive features of Appellant's invention have been consistently urged before both the Patent Office and the Court over the past 10 years or more (See main Brief, footnote 4) so such features do not constitute an "afterthought", as did the feature relied upon by the witness in the *Zenith* case.

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³ Appellee's characterization of the witnesses as "three European experts" (Brief, p. 15) seems preposterously chauvinistic. Appellee, above all, should realize that *all* workers (both U.S. and foreign) in a field are considered to have "constructive knowledge" of *all* art (both U.S. and foreign) in that field. See, for example, *Brenner et al. v. Ladd*, 247 F. Supp. 51 (DCDC 1965).